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FUNDAMENTALS OF
INDUSTRIAL ADMINISTRATION
AN INTRODUCTION TO MANAGEMENT

VOLUME I

To meet Part A of the current Syllabus on *Fundamentals of Industrial Administration*, covering the :—

Elements of : Commercial and Company Law ; Partnerships and other business combinations ; Statistics and office procedure ; Public aspects of financial responsibility and control ; Financial statements, costing and estimating ; Control of internal expenditure.

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FUNDAMENTALS OF INDUSTRIAL ADMINISTRATION

AN INTRODUCTION TO MANAGEMENT

BY (THE LATE)
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NEW REVISED EDITION IN TWO VOLUMES

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VOLUME I

FOURTH EDITION

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1947

THIS BOOK WAS DEDICATED
TO THE
INSTITUTE OF INDUSTRIAL ADMINISTRATION
BY THE LATE
EDWARD TREGASKISS ELOURNE
THROUGH WHOSE INITIATIVE AND FORESIGHT
THE INSTITUTE WAS FOUNDED IN 1920

"There are pioneer souls that blaze their paths
where highways never ran," and he was one.
Completely un-selfseeking, dominated by a
dynamic sense of mission that rendered him
impervious to all discouragement and unreponsiveness,
and he encountered plenty, he sacrificed both himself
and his personal interests in promulgating the basic
truths of management. When Mr. Valiant-for-Truth
passed over the river you remember how, Bunyan said,
"all the trumpets sounded for him on the other side."
I often think they must have sounded loudly for
EDWARD ELOURNE.

SIR LYNDEN MACASSEY, K.B.E., LL.D., D.Sc.
in an Address on *Management and the Community*
at an I.I.A. Conference on *Management and Society*.
April, 1944.

PREFACE TO THE FOURTH EDITION

THE sombre history of the period beginning August 1914, and ended thirty-one years later, closed on a note of mingled suspense and hope. Resulting from two world wars, our nation has parted with the greater part of its external investments, largely ceased to be a creditor and become a debtor country, lost temporarily much of its former world trade, and is challenged for the trade it formerly enjoyed by powerful rivals whose inventive ability, industrial development, and productive capacity have been immensely stimulated by the common effort which they shared with us in resisting aggression. Later competitors will be ex-enemy nations whose industrial potential will not so long hence have to be seriously reckoned with.

Though, under the stimulus of the armed struggle for existence, our technical progress and achievements did not suffer by comparison with other nations, our efforts towards recovery and expansion will have to be pitted ere long against those of all our powerful industrial rivals, ex-ally and ex-enemy alike, in an intensive struggle to regain and retain that measure of world trade on which our prosperity, and indeed our existence as a great nation, must depend.

For a comparatively short period there is likely to be a sellers' market while shortage of consumer goods everywhere needs to be made good and requirements from vast areas of devastation in so many countries clamour to be satisfied; but later there will develop a buyers' market in which the choice will lie with the customer; and in the latter stage, which may prove to be permanent, that country in which knowledge of the principles and practice of industrial administration is most highly developed will be in the best position to compete.

During the second world war, in particular, we have realised as never before the part which enlightened management can play in the improvement of methods of research, design, development, production and distribution. It is now widely accepted

in this country that organised instruction can provide a reliable foundation of knowledge favourable to the development of personality and individual capacity for management; and a large measure of professional agreement has been reached as to the quality and scope of the fundamental knowledge which can assist in equipping an aspirant to industrial leadership in the post-war world for the effective discharge of his or her responsibilities.

Beginning in 1934, Technical Institutions throughout Great Britain have given to many thousand students of the subject "Fundamentals of Industrial Administration" instruction through which they have been led to a sound elementary understanding of the place of industry in the world of affairs, the controlling influences under which it operates, and the functions involved in its management.

The text of the first edition of this book, published in 1934—of which the greater part is incorporated in the present edition—was prepared in collaboration with a number of experts by the late Edward Tregaskiss Elbourne, founder of the Institute of Industrial Administration, to which Institute and to the cause of education for management which is its prime concern, and of which he was the outstanding pioneer in Great Britain, he contributed enlightened understanding, tireless effort and selfless devotion until his untimely death in 1935.

Ten years' experience of working to the first syllabus has enabled the Institute of Industrial Administration to simplify and rearrange the original lay-out, and thus to facilitate both the work of Technical Institutions in giving instruction in the subject, and the task of the student in grasping it, and so the more effectively to serve the Institute's primary purpose. In brief, that purpose is to give to the student a reliable and comprehensive but necessarily elementary view—broad, informative and helpful, though, being introductory, neither deep nor exhaustive—of commercial and industrial activity in their administrative aspects.

Through the initial wide outlook of such an introduction the student will be the better enabled to ascertain to which of the many fields of activity he feels attracted, and consequently to define his first objective, to plan his career, and, thus prepared, to approach with clearer understanding the more specialised knowledge which he will need subsequently to acquire by study, observation, and experience in his selected field.

Generally speaking, the effect of a study of this subject may be likened to looking at a landscape through the wrong end of a telescope ; the diversified fields of industry and commerce with their salient features are brought into correct focus, but in miniature. By keeping this simile in mind, the student is in a position to correlate the thousand-and-one manifestations of the management function that he will meet as he pursues his career. The clearer perception and greater confidence so acquired may be expected to enlarge his understanding, and so to give a measure of direction and strength to the development of his personality, upon which his success as a manager will ultimately depend.

The content of the subject "Fundamentals of Industrial Administration" is valuable alike to the student who intends to complete, at a later stage, the further studies requisite for the Intermediate and Higher Certificates in Industrial Administration, and to him who intends to pursue a specialist career in, *e.g.*, personnel administration, marketing and distribution, production management, accountancy, banking, insurance, secretaryship or office management. Other preliminary studies, in which it is not essential that every student of industrial administration should become expert, but of which reasonable knowledge will stand him in good stead, are those of accounting, statistical method, and the correct use of our English speech, particularly as written, but also as spoken.

Retention of statistical information used in the Third Edition has been preferred to substitution of figures which, though more recent, reflect special features of this country's tremendous effort in the war and immediate pre-war periods which would preclude normal comparison.

As the author of *Fundamentals of Industrial Administration* had the benefit of advice and help from friends with high administrative experience, so too has the editor of the present revised and renamed edition received similar assistance. In particular his thanks are due to the Controller of H.M. Stationery Office for permission to reproduce the official publication *Scientific Research and Development* (Cmd. 6514), to the Institute of Industrial Administration for permission to use much of their published material in the Introduction to Vol. I and in the Appendices to Vols. I and II, and to Messrs. Robert

viii PREFACE TO THE FOURTH EDITION

Appleby, F.I.I.A., M.I.P.E., A. W. McIntosh, M.A., M.I.I.A., W. L. Morgan, F.C.I.S., F.I.I.A., F.L.A.A., and O. W. Standingford, F.I.I.A., for their able and authoritative contributions.

A general acknowledgement is made to those authors and publishers (the subject of a Bibliographical Index) whose works have been sampled by quotation,* in order to indicate to some extent the valuable material at the disposal of the student. Every endeavour has been made to give acknowledgement wherever it is due, and regret is expressed if any failure in this connection has occurred. Acknowledgement is due also to the librarians of the American Library (London), the Institute of Chartered Accountants, the Institution of Mechanical Engineers, the Management Library, and the Royal Statistical Society for their unfailing help.

It is hoped that the book in its present form will assist the student to obtain a thorough preliminary understanding of the subject, to lay a reliable foundation on which to build his reading of other and more advanced works on specific aspects of industry and commerce, and to appreciate their true relation to industrial administration as a whole.

H. MCFARLAND DAVIS

London, August, 1946.

* Reference to the *Bibliographical Index* is given in the text by raised numbers (e.g., ¹⁸ on page 2).

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INTRODUCTION

The managerial skill with which industry is conducted, and the spirit which animates the parties in it, are of the first importance to the nation.

Both can be greatly improved by education and training. At present there are not enough organised channels by which experience can be handed on, and, as a result, much that would be valuable to the next generation disappears without trace.

The only solution is to appoint more collectors, collators and communicators of such knowledge, which means in a word appropriate educational arrangements. Pioneer work in this direction has already been done, and over seventy educational establishments up and down the country provide some instruction in management subjects, mainly for evening students.

If we are to meet the needs of the situation, or catch up with our rivals, great developments must take place.

To ensure a supply of business managers trained for the challenge of the times we must take steps to select and train them. The social importance of sound management, its intricacy and the very large potential numbers of students, mean that specific schools of business should be set up.

It is suggested that these schools should conform to the medical rather than the arts pattern. The closest possible contact with practice should be maintained, and all lecturers should be men with actual experience in industry.

Research in the field of management is greatly needed, and would yield valuable results. Much good work—not always applicable without care to British conditions—has been done in the United States on both the educational and the research sides.

The men selected for administrative duties will decide Britain's place in the economic world. The various Services have used the techniques of selection and training with good results, and no doubt these procedures can play a part in the resettlement of the demobilised.

Already courses of instruction have been worked out and

tested over many years ; it remains only to make them widely available.

Wherever men gather in purposeful groups, there is a leader or manager among them. Thus management is an art which extends beyond the industrial field and constitutes a training for life as well as for livelihood.

Progress depends on the realisation of need. So far only a limited number of industrialists have supported the case for business education. Yet on it depend both the numbers and quality of our future managers—matters of cardinal importance in the time ahead.

INDUSTRY and trade are of vital importance to the nation. They represent for the vast majority of people the major activity of their lives. The recent rapid advance in technology has borne rich fruit in material well-being and greatly raised the standard of living. This rapid acceleration of technical invention and change is bringing with it a host of new economic and social problems which require for their solution the application of the same methods of science as those which created them. Such problems are those associated with the increasing violence of the trade cycle, periodic unemployment, seasonal variations in industrial and commercial activity, the waste of over-production, and recurring conflicts with labour.

The social implications are even more important than the economic ones. In the modern State, business now occupies a position of pervasive and dominant power, and hence must carry an equivalent responsibility for the general tone and temper of social and political life. A few generations ago, business existed to supply those goods and services which the simple tastes of the times demanded ; but modern business, by contrast, is probably the most powerful influence in the creation as well as in the satisfaction of our wants.

Business life provides also the most common and best developed examples of orderly human association. In business the different social strata meet in an interactive relationship, and it is there inevitably that the frictions and disorders born of divergent interests develop. Our attempts at co-ordination in business life colour or discolour our social life outside, mould our institutional structure, and to a considerable extent create our outlook and fix our habits. In a word,

business has to a large extent taken the place of older institutions as the real arbiter of human destiny.

MANAGEMENT AS A PROFESSION

The importance of this development and its effect upon the status and responsibilities of business are not, however, adequately recognised. Every recent writer of standing in this field—*e.g.* James Burnham, Peter F. Drucker, A. L. Macfie, Elton Mayo, Joseph A. Schumpeter, A. N. Whitehead—has each in his own way diagnosed the position as one of authority without responsibility, power without the obligation of stewardship.

The business world itself is looking for a remedy in the creation of a profession of Management or, more accurately perhaps, a group of professions of Management. Already professional status has been or is in course of being achieved in respect of many of the specialised techniques of business.

The development of large-scale business, its increasingly scientific character, the intervention of the State, the growth of workers' organisations and the separation between ownership and operating control through widely diffused shareholding, have resulted in the growth of a salaried managerial group who are becoming conscious of the importance and intricacy of their task. Their duties are approximating more and more to the generally accepted criteria of a profession, since they involve intellectual techniques rather than mechanical or manipulative skill, and use the methods of science in searching for the solutions to their problems. Further, a beginning has been made in laying down courses of training, in deciding on standards of competence, and in evolving a code of etiquette and ethics.

While this movement is gaining momentum, it cannot yet be said to be anything like universal. What can be said to have reached the stage of common acceptance to-day is the vital importance of human relationships in business. With the increasing scale and widening area of operations, intimate contact between employer and worker, and between producer and purchaser, has disappeared over large spheres of industry. The consequence is—and we are only now becoming fully aware of it—that industrial life fails to supply those human satisfactions of a social nature which are needed to assure the

machine-minder or clerical employee that he is more than a nameless number on a pay-roll. It is coming slowly to be realised, largely owing to the valuable work of a group of Harvard professors, that the root cause of discontent is the great if unconscious grievance that personality has been almost squeezed out of work. Unless we can so organise society as to bring every man into the position of being a conscious contributor to the activity which sustains the whole, unless the worker can feel his task self-chosen and its discipline self-imposed, with himself not a cog on the driven wheel but the human unit, our industrial system is certain to be shaken and may be shattered.

ORGANISATION OF RESEARCH

On both the human and the technical sides of business, organised research is capable of making significant contributions. While many businesses, especially the larger ones, have already stimulated or organised research on the technical side, business as a whole is not yet convinced of the applicability of scientific methods to the less tangible human problems. Basic studies underlying human relationships in industry are psychology, statistics, economics, and sociology; and these are as vital in business training as instruction in physics, chemistry and mathematics are to an engineering student.

It is of course true that many of the present managers in industry have had no opportunity of getting a grounding in these sciences; to that extent they are less equipped than they might be for their function. In the past this perhaps mattered less than it will in the future. A random selection of young people for business used to give a cross-section of the nation's ability, but in the last few decades an elaborate scholarship system has been developed which selects many of the brightest youths and directs them into the universities and thence generally into the learned professions or the civil service.

If, then, those likely to develop the highest managerial talent must be sought in our advanced educational institutions, it seems a matter of common sense to give the curriculum some relevance to their needs. Overwhelmingly the most important matter to an executive is the understanding of the colleagues with whom he works and the establishment of

responsive, co-operative relations with them. It so happens that this is also of great social importance. Why should we ignore the contributions that have already been made, and yet may be made, to this problem ?

THE PRESENT POSITION

Many promising developments have already taken place in education for Management. The need for knowledge and training in Industrial Administration has shown itself at all levels and in a diversity of ways—for workers, through joint advisory committees ; for supervisors, through training schemes for foremanship ; for managers, through conferences and membership of the Institute of Industrial Administration ; for specialists, through the activities of their respective associations ; and for employers through the management research group movement. On all sides there have been growth and development.

The pioneer stage being over, the next great effort will have to be directed to securing the co-operation of the different associations interested in this question. Whatever be the ultimate shape of things to come, some measure of association is obviously an immediate need. This matter is at present engaging attention in official quarters, and we need not, therefore, pursue it here.

Since its foundation in 1920 the Institute of Industrial Administration has laid emphasis on the importance of education and training. Gradually, and largely owing to requests from potential students, classes and courses have been started at various technical and other colleges throughout the country. At the present time over seventy institutions in Britain offer courses in some aspect of industrial administration, and promising beginnings have been made in such other countries of the Commonwealth as Canada, Australia, New Zealand, South Africa and India. Throughout Great Britain there are nearly twenty Centres of the Institute where local members meet for enlightenment and discussion. Progress in these directions has been accentuated since 1939, due to a growing realisation of the fact that the application of sound principles of management under improved working conditions has for one of its results more and better production, and the pace seems to accelerate rather than to slacken.

THE WAY FORWARD

The business community, with all its resources, should be able to find full-time lecturers in all important industrial subjects and it should, moreover, be able to discover them in its own ranks. Further, it must so organise itself as to be able to keep them in its ranks. The model in all these matters is the medical school, where students are never allowed to feel that the instruction they receive is divorced from or lagging behind either the best practice or the most recent research.

The position of research work also is anomalous in this country. While the larger industries and the State engage in technical research, there has been no equivalent development in managerial research. The attention given to it in this country is in no way commensurate with its social and economic importance or the needs and resources of its potential beneficiaries.

Practically all the most significant work of recent years lies to the credit of the United States. The number of students taking business courses of university standard there in pre-war years was over 100,000, or double the number of all university students in every faculty in this country. Although the first business college—the Wharton School of the University of Pennsylvania—was founded as long ago as 1881, it was not until after the War of 1914–18 that rapid progress was made in business training. This was made possible by the munificence of the American business community, which lavished the most generous endowments on the Universities for the purpose of promoting both teaching and research. Before the war a large number of colleges of university standing in the United States were pouring into the stream of American business life young people trained in the principles and practices of modern industry and capable of rising, after further training and experience, to responsible and executive posts.

THE FUTURE

The above survey indicates that no scheme of reform in national education can be considered complete unless it includes provision for training in management. Our industrial development, our commercial progress, the efficiency of our public services, and the success of every form of planning and recon-

struction depend in the last resort on the professional skill and competence of the men selected for administrative duties.

The vital importance of this type of training has been conspicuously demonstrated in the armed forces since the outbreak of war. With the growth in the numbers engaged and in the complexity of operations an urgent demand arose for men capable of assuming various degrees of responsibility. That demand was met by selecting those who under various psychological and other tests revealed an aptitude for leadership, and by training them systematically in the techniques of organisation, administration, and the control of men. The results of this progressive policy have amply confirmed the double claim that management can be taught and that the teaching of management on scientific lines leads to a marked improvement in efficiency.

The same problem is pressing in every other department of our national life, and it should be handled in the same way by the organised selection and training of our future managers and administrators. As the principles of management are applicable to all forms of enterprise, many of the men who have been trained for administrative duties in the Army, Navy and Air Force will in some measure be suitable for recruitment to responsible posts in civil life, subject to further training. When through our higher schools, technical and other colleges and universities, the advantages such men have enjoyed in that direction are made available to all who are likely to benefit from them, we shall have taken the first essential step towards ensuring that our post-war plans will not become abortive for lack of men capable of carrying them to fruition.

It should be emphasised that the broad outlines of education for management have been established on the basis of many years of experience. Graduated courses have been drawn up covering the needs of students of all ages and types. In the early stages only the elements of business administration are included; later more detailed treatment is given to personnel management, statistics, accountancy, finance, marketing, production, and other special aspects of the management problem. As already pointed out, the various associations concerned in management afford ample opportunities for study and discussion, while examinations afford recognised standards

of professional competence. When the advantages of periodic refresher courses in management for those occupying responsible positions are recognised, the necessary organisation will be readily forthcoming.

THE UNIVERSALITY OF THE MANAGEMENT FUNCTION

The importance of making education in management widely available is underlined by two considerations which are often overlooked.

A certain element of management enters into almost all grades of occupations, whether the specific work is technical, commercial, clerical or otherwise. Consequently instruction in the fundamentals of management should not be confined to those students who are entering on a purely management career.

The second consideration is that education in management fits a man for responsible duties in any type of undertaking. The principles of efficient management are universal ; only the application of them differs according to the special functions and circumstances of individual enterprises or services. Thus men can be and are trained for management as one trains them for law, medicine, or any other profession, leaving them, when qualified, to choose one out of many specialised lines of activity.

The full development of educational facilities in the sphere of management depends upon adequate realisation of the vital need for such facilities by the business community as a whole. Hitherto, such progress as has been achieved in the organised study of management has been the work of comparatively small groups of individual enthusiasts. Now it has become necessary for industry and trade to take an active part in a movement which has already brought them much benefit and is capable, if energetically pursued, of bringing much more. The appeals which have been made by the various individual organisations and engineering institutions for improvements in technical education have made a definite impression upon the Press, Parliament, the Ministry of Education, and the educational world in general. They should be extended to cover education in management, which is not only a part of full technical education of the

usual type, but is in itself a form of technical education which will supply industrial and other forms of enterprise with key men who have hitherto been scarce and are certain, if the educational development for which there is such pressing need is not carried out, to become still scarcer.

TRAINING FOR MANAGEMENT

In the business world, Industry, Commerce and Finance are interdependent ; and the prosperity of Commerce and Finance is closely related to the efficient direction and management of Industry—in other words, to the exercise of the administrative function, involving the control and co-ordination of the technical functions.

The operation of the administrative function does not vary greatly from one industry to another, despite differences in the application of some of the technical functions, especially those of production and distribution.

The administrative function is distinct from any technical function ; education in the exercise of this function is the raising of a superstructure on the foundation provided by training in one or more of the technical functions.

Its general principles can therefore be taught notwithstanding the differences between particular industries. Naturally no question arises, in its teaching, of competition with instruction in the full technique of any specialist profession, since understanding of the principles of administration enhances the value of such technique.

Personality is a highly significant factor in Management ; but training serves to direct and develop personality, and adds the constructive value derived from thought and study. To the greater number of executives upon whom industry has mainly to rely, training would make for greater efficiency, and is, indeed, a necessity if the more responsible duties of management are to be carried out in accordance with fundamental principles.

The essentials of progress towards efficient management are :

Personality	<i>plus</i>	Specialised Professional Training	<i>plus</i>	Specialised Executive Experience
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Supplemented by

Training in the Principles and Technique
of Industrial Administration.

THE PLACE OF EXPERIENCE

Training for management, to be effective, must include precept and example, learning and doing, education and experience. The educational aspect of the matter has been touched upon already, and is discussed more fully in Appendix B, Notes for Students. The place of experience has been well described by Dr. James A. Bowie,² who says in this connection :

Those who turn a deaf ear to the need for education for industry are frequently heard to extol the virtues of experience, and in some cases to deny that any other method of learning business is possible. True, the exponents of the school of "hard knocks" tend to diminish in numbers even in this country, but as many of the business men of to-day are products of this school, the doctrines underlying it account to a large extent both for their apathy and opposition to systematic business training.

Every attempt to establish new courses of instruction in developing aspects of human effort has had to overcome this prejudice. In the history of medical education, for instance, progress was thus retarded for many years. In the early nineteenth century there was no organised or authorised system of medical education in Britain. There was no Medical Register, that is to say, no record of adequately trained practitioners. There was no national body, such as the present General Medical Council, that could determine the character and attainments of entrants on a medical career. The general custom for one who proposed to follow medicine was to become apprenticed to a practitioner for a number of years. He would then "walk the hospitals" for a time. The apprentice paid for the privilege of being attached to the practice of some particular surgeon or physician, and in some cases the privilege was put up to auction and went to the highest bidder. Beginning only about 100 years ago, medical students were required to begin their training before they came into actual contact with patients, by acquiring some knowledge of the various sciences that bear on medicine. At the time when this system was instituted, however, it was the subject of derision, and was attacked in some quarters as "impractical and, therefore, un-English." Nevertheless the "theoretical" procedure has proved much more practical than its predecessor, and every civilized country has now adopted it.

The position of education in industrial administration to-day is very like that of medical education 100 years ago. The apprenticeship system, though rapidly disappearing even in the manual crafts, is still the rule in the training of industrial administrators. But, even so, the system is very seldom explicitly organised. Only in the case of a few large firms, which take public school or university men and put them through a course of systematic experience in their works, can the system be said to be consciously organised. In all other cases, and they are the vast majority, young men, when they enter the employment of a firm, cannot tell what future lies before them. There is no recognised ladder of promotion, no assurance of higher rank in return for efficient service. Cases are numerous where enterprise and initiative have been stifled by a superior jealous of his authority and in fear of being supplanted, or where merited promotion has been blocked by the influx of well-connected outsiders. Where there are no rules of the game, mal-practices, hitting below the belt, and fouling are possible, and are practised to the great discouragement of patient merit.

But even if this were not so, experience is a poor substitute for scientific instruction. It is a slow, cumbersome, and wasteful method of learning any intricate and complicated art. The workshop is a productive unit, and is not laid out for instruction. The people in it are not teachers, are not paid for teaching, and usually have no time for teaching. No training is worth the name that does not present an impartial and critical attitude to practice. The higher staff of a business are little likely to preserve such an attitude to that which they have created, and the lower staff dare not criticise lest they incur the censure of their superiors. No single workshop, however large, can provide the range of experience necessary to the complete equipment of management. Are our future managers to know nothing of how rivals at home and abroad conduct their businesses? Are they to be left to get acquainted in their spare time with the literature on the subject and the increasing amount of research work that is illuminating it? Again, experience is of most value only when preceded by previous training. If the youth is plunged in his impressionable years into a business, he is as likely to acquire prejudice and fallacy as truth and knowledge. Having experience, and pro-

fiting by experience are two different things. Experience may as likely as not simply fill the youth with the particular mistaken notions and specious misconceptions which his firm uses to justify its policies. It is of first importance that the youth entering industry should know what he wants to know, should have a mind equipped for learning, and should have some norm to which to relate, and by which to test, his experiences.

But while experience can be no substitute for preparatory training, it is a necessary complement to it. The modern business world is marked by such intricacy of organisation and complexity of operation that those who rely on experience alone for their training find it increasingly difficult to visualise an organisation as a whole, to understand the functions and relations of its parts, and to appreciate the principles and policies of its administration. Yet, without this, the young man is not fitting himself for managerial functions and preparing himself for a position of responsibility.

It is, however, recognised that the young man must enter business in a subordinate position whatever his training, for not only must he first prove his worth, but in no other way can he become familiar with essential details and adapt himself to the particular organisation he has joined. The young man must, therefore, be encouraged to regard his college training in industrial administration as a preparation, not as a substitute, for experience. But it is important that the experience be real and not fictitious. The usual method of flinging a young man into a works, giving him no position, no title, no responsibility, and no definite work is to be condemned. One man's experience is another man's boredom. Experience should be wide and variable, and should from as early a stage as possible embody an element of responsibility. It is important that the young man should feel the weight of a job. He should not be left to drift around in an endeavour to pick up by a process that is little better than mimicry the details of administration. Yet this is often done, and accounts for the fact that the average student hates the first few years of his novitiate. If he rises to command, his position is prejudiced by the fact that those who must obey taught him the rudiments of his business knowledge.

There is much to be said for the young entrant into business becoming for a time an ordinary clerk or an ordinary workman.

This will supply him with an inside knowledge of industrial life, the hard work, the monotony, the kind of lives men lead, the wages they earn, the operation of factory regulations, the relations between departments. All this personal contact will be invaluable later on when he has to make decisions affecting the lives of hundreds of men and their families. He will be able to visualise the deeper significance of business problems, and will be less likely to allow the natural autocracy of leadership to blur his vision of consequences.

Education for Business Management.²

VOLUME I

CHAPTER 1

ELEMENTS OF COMMERCIAL LAW

Commercial law is apt to be looked on as constituting the rules under which "duels" are fought. Although technicalities may give, on occasion, unfair advantage to one or other side in a dispute, the fundamental objective of commercial law is that of equity, of the square deal. The student of industrial administration must therefore study commercial law to acquire the knowledge that will ensure legality, give him a wide knowledge of business practice, and tend towards equity in his own business dealings. If he is careless in what he does or does not do at the initiation, or in the conduct, of any business arrangement, the consequences may be serious to many persons. To know the law is therefore one of the higher duties of the citizen; and every citizen is presumed to have that knowledge.

COMMERCIAL Law may be defined briefly as all that portion of the law directly concerned with business. Commercial Law derives from (1) the Common Law, (2) the Law Merchant, (3) Statute Law. Common Law is that great body of law which has never been formally enacted, but is founded upon tradition and the immemorial and general custom of the realm, as interpreted by the judges. It is often called "the unwritten law." The Law Merchant also is unwritten, and depends upon mercantile usage, which, having become universal, is recognised by the Courts as binding. It may be of modern origin. Statute Law consists of Acts of Parliament, and, in contradistinction to Common Law, is often called "the written law." Commercial Law is chiefly concerned with the rights and obligations arising out of business transactions. An agreement which gives rise to a right or an obligation enforceable at law is called a Contract. Commercial Law is therefore to a great extent a part of the Law of Contract in either its general or its special applications.

Company Law (Ch. II) and Industrial Law (in Vol. II) are, on the other hand, more concerned with the protection of the

interests of the public in certain relationships than with the arrangements voluntarily entered into for the purposes of business. Still, there is no clear dividing line, since the Law of Contract is operative also within the framework of Company Law, and Industrial Law.

The treatment of Commercial Law here is necessarily limited, and is, by arrangement, largely drawn from a small but excellent book for students, *The Elements of Commercial Law*, by H. W. Disney.¹² The subjects dealt with are comprised under the following heads :—

- Arbitration.
- Contracts.
- Agency.
- Sale of Goods.
- Negotiable Instruments.
- Patents.
- Designs.
- Trade Marks.
- Copyright.

ARBITRATION

Before proceeding further, it is desirable to call attention to the widespread practice of arbitration as distinct from litigation. The outstanding advantage of arbitration in business disputes is the avoidance of publicity and, in some cases, the saving of expense. Arbitration may be resorted to by mutual consent of the parties, after a dispute has arisen; but ordinarily, if a dispute arises, arbitration follows, by virtue of a condition, called an arbitration clause, in the original contract. An arbitration clause is very usual, as it is very desirable, in a partnership deed, and such a clause invariably appears in contracts of insurance. Arbitration is a normal procedure for settling disputes arising in the course of Produce Exchange operations, as it is in other associations of traders.

Although the word "disputes" is used, it is not to be understood that the parties seeking arbitration have necessarily quarrelled—they may merely seek decision on the questions at issue by an independent person, in whose competence and

integrity both sides have confidence, and whose award they have previously agreed to accept. But in resorting to arbitration the parties do not wholly abandon all right of appeal to the Courts, since in several circumstances application may be made to the Courts, notwithstanding arbitration proceedings, and the Courts may remit the award to the arbitrator for reconsideration, or set it aside altogether.

No special qualifications are required by law for an arbitrator, and any person, acceptable to both sides, may act. In matters involving accounts, professional accountants are naturally preferred, whilst in technical matters the arbitrators usually appointed are engineers, chemists, architects, surveyors, according to the nature of the dispute. Barristers, again, are frequently appointed, in view of their legal training in the weighing of evidence and their ability rapidly to assimilate the essential points of a dispute.

Arbitration is subject to the Arbitration Acts, 1889 and 1934, and, under those Acts, may have nearly all the formalities of a regular court of law. In a number of special cases, Parliament itself has decreed that disputes arising in carrying out a Statute shall be settled by arbitration, *e.g.*, where a workman claims compensation for an accident arising out of and in the course of his employment.

CONTRACTS

A contract is an agreement which is enforceable at law.

Essentials of a Contract.—An agreement takes place when two or more parties declare their consent regarding anything which some one or more of them is to do or to abstain from doing. Consent is the most essential part of an agreement; and it is generally declared by the acceptance of an offer or proposal. When an offer is accepted, the acceptance usually amounts to a promise; and the offer also becomes a promise by its being accepted. An agreement must be expressed in some way. Usually it is expressed in a written document, or in a series of written documents, but it can also be expressed by spoken words, or be inferred merely from the conduct of the parties.

Offer. Commonly the offer or proposal is made direct by the offerer to a particular person, but this is not always the case. For example, a railway company makes a proposal

when it advertises that a train will start at a stated time to a stated place. Any person who buys a ticket entitling him to travel to the stated place, by the train leaving at the stated time, accepts the company's offer subject to any advertised conditions, and there is a binding contract accordingly between the company and the ticket-holder.

An offer can be withdrawn at any time before it is accepted; and acceptance after such withdrawal is useless. A promise to keep an offer open is not binding unless there be consideration for such promise.

If a person make an offer by post, he is understood to be making the offer all the time the letter is on its way. And if the other party accept the offer by posting a letter of acceptance within the time mentioned in the offerer's letter, or (if there is no such time mentioned) within a reasonable time, and before receiving any notice of withdrawal, the acceptance is complete and the offer is binding.

As soon as a reasonable time has elapsed and no answer has been received, the offerer is entitled to assume that his offer has been rejected.

Acceptance. There is no agreement unless the acceptance of the offer corresponds in all essential particulars with the offer. If the acceptance introduces any condition or new matter not included in the offer, there is no acceptance. Where an offer is varied in the acceptance it amounts to a new offer, and, before there can be a contract, the original offerer must consent to the variation.

No promise, except it be made in a deed, is binding unless some valuable return for the promise is to be made by the person to whom the promise is made. This return is called "consideration." In contracts for the sale of goods, as, for example, by A to B, B promises to deprive himself of the price in consideration of becoming the owner of the goods, and A promises to deprive himself of the ownership of the goods in consideration of the price paid to him by B. In the legal sense, "consideration" may consist in either any benefit to the person making the promise, or any loss, trouble, forbearance, or responsibility to, by or upon the person to whom the promise is made.

The law does not generally inquire into the adequacy of the consideration. One may promise to pay £10 for an article worth but 5s.; yet, in the absence of fraud to obtain the

promise, such a promise is, in general, binding in law. Consideration that is already past before the promise is made is not usually sufficient to support a promise. Thus, suppose A to render a gratuitous service to B, there being no express or implied agreement that the service is to be paid for, and no request for the service, and, after the service has been rendered, B promises to reward A for the service, the promise is made for consideration already past, and is not binding in law upon B. It doubtless is binding upon B in *honour*, but that is quite another matter. Further, the consideration must be something which the person giving it is not already bound to give.

The doctrine of "consideration" has no place in Scots Law. In Scotland consideration is not necessary either in contracts by deed or other contracts; and a promise may be binding without consideration.

Kinds of Contracts.—There are two kinds of contracts, viz. Contracts by Deed (or Specialty Contracts) and Simple Contracts.

A promise in a deed is called a covenant, and, unless tainted with illegality, every covenant is binding, as a general rule, upon the person who enters into it. Consideration is not required for a promise made by deed, except in the one case where an agreement in restraint of trade is entered into by deed. Every contract made otherwise than by deed is a *simple* contract. Thus a contract contained in a formal memorandum of agreement not under seal, a contract made by correspondence, a contract made by spoken words, and a contract established merely by the conduct of the parties, are each and all of them simple contracts.

A deed is a writing sealed and delivered by the person making it. The seal is the visible sign of a deed, and the feature that distinguishes it from all other documents. A sealed writing has no effect unless it be also "delivered." Delivery takes place when the person making the deed does anything to show that he intends the deed to become operative. He may hand the deed to another party to it, but usually he places his finger upon the seal, and says, "I deliver this as my act and deed."

Ordinarily, the seal consists of a small disc of red paper; but this is not so in the case of Corporations. Every Corporation has its own distinctive seal, which must be impressed in the presence of two or more officials of the Corporation, who attest the seal by their signatures. At Common Law, a Cor-

poration can only bind itself by contract if the seal of the Corporation is affixed to the contract. But it is now well established that a Corporation can be bound without seal by the acts of its duly authorised agents in matters of small importance and frequent occurrence (e.g. the appointment of inferior servants), and also in respect of all contracts made by a trading Corporation in the ordinary course of its business, and incidental to the purpose for which it was created.

No consideration is required to validate a covenant in a deed, except where the deed expresses a contract in restraint of trade. A contract by deed supersedes a simple contract to the same effect. Action arising out of a contract by deed may be brought at any time within twenty years of entering into it, but action on a simple contract is Statute barred after an interval of six years. A statement in a deed is, in the absence of fraud, duress, or mistake of fact in respect of which equity would grant relief, conclusive against the maker of its truth; the truth of a statement in a simple contract is presumptive only.

Some kinds of contracts must be entered into by deed, which, of course, is always a written contract; and there are some simple contracts that must always be in writing, in order to be enforceable.

Contracts that must be by Deed.

- (a) Contracts entered into by Corporations (but see above for exceptions).
- (b) Leases of upwards of three years.
- (c) Transfers of British ships or any share in them.
- (d) Conditional Bills of Sale.
- (e) Sale of sculpture with copyright.
- (f) Sale of shares in companies governed by the Companies Clauses Act, 1845 (relating to certain undertakings of a public nature).

Simple Contracts that must be in writing.

- (a) Bills of Exchange (which include Cheques) and Promissory Notes.
- (b) Contracts of Marine Insurance.
- (c) Assignments of Copyright, and of certain rights of action.
- (d) Agreements for the sale of goods of £10 or upwards.

(e) Agreements within the provisions of Section 4 of the Statute of Frauds. These are : (1) A promise by an executor or administrator of a deceased person to answer damages out of his own estate. (2) Contracts of guarantee. (3) Contracts in consideration of marriage, *e.g.* an agreement by A to settle a sum of money upon B in consideration of B's promise to marry A. (4) Any contract for the sale of land, or by which any interest in land is given. In Law, " Land " includes everything attached to, or above the surface, and everything beneath the surface, as well as the surface of the land itself. (5) Any Agreement not to be performed within a year of the making thereof, *e.g.* an agreement to employ a person as manager at a monthly salary for the space of one year, commencing one month after the agreement is entered into. Clearly, such an agreement cannot be performed within one year.

Unenforceable Agreements.—Where the consideration for the promise or the promise itself is illegal, the agreement is void. Illegal Agreements are of three kinds: (a) contrary to positive Law, (b) contrary to morality, (c) contrary to public policy.

Agreements Contrary to Positive Law. There can be no valid agreement to do any act forbidden by law, *e.g.* to commit a crime. An agreement between two persons to defraud a third is void even though the fraud contemplated does not amount to a crime.

To bet or wager is not an unlawful act but because betting is declared by statute to be null and void, money won by a bet cannot be recovered by any process of law.

In some cases, a contract is declared to be void by Act of Parliament. Thus, the Workmen's Compensation Acts, 1925 to 1943, of which the principal Act is that of 1925, forbid an agreement between master and servant that if the servant be injured by an accident arising out of, and in the course of his employment, no compensation shall be paid to the servant.

An agreement to lend money is not illegal or void, but, owing to the abuses of usury, Parliament has intervened, and by the Money-Lenders Act, 1900, a money-lender must be registered and transact all his business at his registered office

and in his registered name. Further, where the rate of interest charged is excessive, and the transaction is harsh and unconscionable, the Court has power to set aside the contract and order a new contract to be entered into on such terms as the Court deems reasonable.

Firms contravening the provisions of the Registration of Business Names Act, 1916,* are debarred from suing on any contract entered into during the contravention unless the Court grants relief.

Agreements Contrary to Public Policy. An agreement may not be contrary to any positive law, or to morality, but yet it may be of such a kind that the general welfare of the State and the public interest are impugned by it. Thus to trade with a citizen of a country with which this country is at war is illegal. So also is an agreement which interferes with the course of justice; or an agreement by which one person provides funds to enable another to prosecute legal proceedings in consideration of sharing in any money or property recovered in the action (Champerty), for the promotion of litigation by persons not really interested is considered a public evil.

One of the most important of this class of agreements is an agreement in restraint of trade. An agreement in restraint of trade is one which restricts a person from exercising freely his trade or profession. Such an agreement may impose either a *general* or a *partial* restraint.

A general restraint is one that prohibits the exercise of a trade throughout the Kingdom, or even throughout the world. Such agreements are, in general, void. An agreement in partial restraint of trade may be valid between the purchaser and the vendor of the goodwill of a business, or between an employer and a servant, *e.g.* that the servant shall not, after

* The Act lays down that "Every firm having a place of business in the United Kingdom and carrying on business under a business name which does not consist of the true surnames of all partners who are individuals and the corporate names of all partners who are corporations without any addition other than the true christian names of individual partners or initials of such christian names. . . . Every such firm a member of which has either before or after the passing of this Act changed his name, except in the case of a woman in consequence of marriage; shall be registered in the manner directed by this Act." Every firm required to be registered under the Act must publish particulars of the names and nationality of the partners (if not British) in their trade catalogues, trade circulars, show cards, and business letters, etc.

leaving the employer's service, start a similar business within a limited distance or space of time. The servant may not be unduly restrained from earning his livelihood. Only such restraint as is reasonably necessary to protect the employer from the danger of having his customers enticed away from him by one who may have used his position to ingratiate himself with those customers, and to learn their requirements, or to secure to the purchaser of a goodwill its benefits, is valid. The real test is what is reasonable in each particular case. It is clearly against the public interest that any one should by agreement be debarred from earning his living, by the only means by which he is able to earn it, and so be brought to the state of a pauper supported at public expense.

An agreement in restraint of trade may arise as between manufacturers of a particular commodity who desire to control the output and price of the commodity.* In this connection the following excerpt from the judgment in *Palmolive Co. v. Freedman* is of interest. "An agreement between manufacturers to control the market in a particular commodity by restricting output, limiting sales, and fixing prices may be illegal if it is unreasonable as between the parties or injurious to the public, but such a contract to regulate supply and keep up prices is not necessarily injurious to the public, because an ill-regulated supply and unremunerative prices may be more disadvantageous. The public interest is not considered to be injuriously affected by an agreement to maintain the price of a proprietary article the use of which is not essential to the community."

All contracts in restraint of trade, even though under seal, require consideration to support them.

Termination of the Contract.—A contract may come to an end in various ways: (a) by mutual agreement between the parties, (b) by performance, (c) by breach of the contract, (d) by lapse of time, (e) by performance becoming impossible, (f) by operation of law.

Mutual Agreement. Clearly if two parties agree to be bound by a contract they may agree afterwards to a mutual release. And if one party agrees to release the other from his obligation in consideration of his doing something different from what he was bound to do by the contract the perform-

* See p. 79.

ance of the substituted obligation brings the contract to an end.

Performance. A party to an agreement must perform his part exactly unless the other party has agreed to vary the nature of the performance. One mode of performance is by payment. In the absence of agreement, a debt can only be lawfully discharged by the payment of legal tender cash, and to constitute legal tender of a debt the exact sum must be shown and offered to the creditor in such a way that he can take it if he chooses. Gold coin is legal tender up to any amount, so also are Bank of England notes for £1 and 10s. Bank of England notes of higher denomination than £1 are legal tender for debts of over £5, except by the Bank itself. Silver coin is legal tender up to the value of £2, and bronze coin up to the value of 1s., but not beyond these amounts. A defendant who relies upon the defence of tender must pay into Court the amount alleged to have been tendered.

Breach. Breach of Contract may be: (a) total, or (b) partial. Where the performance of the obligation of one party to a contract depends on the performance of the other party's obligation under the contract, the first party is released from the obligation if the second party fails to perform his part. So, if A agrees to buy goods from B, the obligation of A to pay for the goods does not arise until B is ready to deliver the goods; and, if B refuse to deliver the goods, A is discharged from liability to pay for them. In such a case the aggrieved party has a right of action against the other party to recover damages for the breach of contract, and judgment obtained for the damages brings the contract to an end.

As a general rule, an action for damages for breach of contract cannot be begun until the time when the contract should have been performed has passed. But there may be such a thing as an "anticipatory" breach of contract, e.g. when one party puts it out of his power to perform his part, or declares that he does not intend to perform. In such a case, the aggrieved party can begin his action at once.

When a partial breach of contract is committed, the other party cannot usually repudiate all liability under the contract, if he has taken part of the consideration for which he agreed. But he has a right to recover damages sufficient to compensate

him fairly for such loss as he has suffered, provided that loss was the direct consequence of the breach of contract.

Lapse of Time. The law enjoins that a person shall pursue his legal remedy without undue delay. It discourages stale claims. Actions arising out of a simple contract must, under the Statute of Limitations, be brought within six years of the cause of action, or not at all. After six years, actions arising out of simple contracts are said to be "statute barred." It is not the claim that is barred, but the legal remedy. If, for instance, a creditor holds security for a statute-barred debt, he may retain the security, though he cannot sue for the debt. The right of action for recovery of a debt may be extended beyond the six years if any payment of interest or principal revives the liability. A covenant or contract contained in a deed is not barred till after the lapse of twenty years. An action to recover land or money charged on land, to recover a legacy, or money secured by a judgment, is barred after twelve years; and it has been held that an action for the recovery of money secured by mortgage deed, though it would appear not to be barred till after the lapse of twenty years, is subject to the limitation of twelve years. The Statute of Limitations cited above does not apply to Scotland. In that country there are many different periods of limitation.

Operation of Law. On the death of either party to a contract his rights and liabilities pass to his executor or administrator, unless the contract be of a purely personal nature. If a party becomes bankrupt his rights and liabilities pass to his trustee, but there are exceptions to this rule.

Interest. Interest is not generally allowed on a debt even by way of damages after the debt has become due. There are, however, several exceptions to this rule, viz. (a) by agreement or custom, (b) on bills of exchange from maturity of bill, (c) on debts for which judgment has been obtained, (d) on payments by a surety, (e) on money bonds carrying a penalty, (f) by the Civil Procedure Act, 1833.

AGENCY

In general, whatever contract a man may make in his own person he may make through the instrumentality of another person whom he has appointed to act for him. A person appointed to act for another is termed an "Agent,"

and the person for whom he acts is termed in relation to that agent a "Principal." Any person may be an agent. An infant, though he cannot bind himself (except for necessaries), may as agent bind his principal. A person may act as agent for both parties to a contract, *e.g.* an auctioneer, who may act both for seller and buyer. An agent may be appointed without any formality, but if he is to execute a deed for his principal he must be appointed by deed. Such a deed is called a "Power of Attorney." In general, an agent may be appointed by writing or by word of mouth, or his authority may be implied from the course of conduct of the principal. Sometimes an agent's authority is irrevocable, without the agent's consent, but usually it is revocable, and is brought to an end by (a) the principal withdrawing the agent's authority, or the agent renouncing his authority, (b) completion of the special business for which the agent was appointed, (c) expiration of time, if the agency is for a fixed time, (d) death of the principal, (e) insanity of principal or agent, (f) bankruptcy of the principal.

Agents may be either (a) general, or (b) special.

A general agent is one who acts for his principal in a matter arising in the ordinary course of the agent's business, *e.g.* a stockbroker; or generally for his principal in relation to business of the principal, *e.g.* the manager of a business owned by the principal or the secretary of a company. The scope of a general agent's authority is binding upon his principal so long as he acts within the usual scope of such an agent in a like position. A general agent can therefore bind his principal even though he acts against his principal's instructions, provided the act done falls within the ordinary scope of the agent's activities, and the other party is unaware that the agent is acting in disobedience of his principal's instructions.

A special agent is one who has authority to do a particular act, or acts, outside the agent's ordinary business, as, *e.g.*, where a master sends his chauffeur to buy for him a parcel of wine. The scope of a special agent's authority is limited to his actual instructions, and if he acts outside those instructions his actions do not bind his principal.

An agent who acts within the scope of his authority for a principal whom he names is never liable to third parties, unless he agrees to be liable; but if he acts outside his authority

he may be answerable in damages to a third party should his principal repudiate the unauthorised act. A principal is liable for the fraud of his agent, whenever the fraud is committed within the scope of the agent's authority, even though the fraud is committed for the agent's own private ends. In all cases of fraud by an agent, the agent is liable for his own fraud, whether the principal is liable or not.

The rights of agent and principal *inter se* are regulated by the agreement between them. It is implied that the principal must indemnify the agent against all costs, charges and expenses which he rightly incurs in transacting the principal's business. The relationship between principal and agent is one of great confidence. An agent may make no undisclosed profit for himself out of his principal's business. If the agent has any personal interest in particular business to be transacted for his principal, he must disclose the fact to the principal. If he is employed to buy goods for his principal, he may not buy his own goods, and if to sell goods, he may not buy them himself. Secret commission paid to an agent may be recovered by the principal. When an agent has been induced by a bribe to make a contract, the principal has a right of action for fraud against both giver and acceptor, and may altogether repudiate the contract.

There is a special class of agents known as "Mercantile Agents," comprising (a) Factors, (b) Brokers, (c) Auctioneers. A *Mercantile Agent* is one who in the ordinary course of his business has authority as agent to sell or buy goods, or to consign goods for the purposes of sale, or to raise money on the security of goods. A *Factor* is employed to sell goods on behalf of the owner, and is usually paid a commission for his services. Hence he is sometimes called a "commission agent." Usually he sells in his own name, and often sells goods of which he himself is the owner. Thus a buyer from a factor does not usually know who is the owner of the goods he buys. A *Broker* is an agent who buys or sells goods or shares for a principal on commission. If he buys or sells goods, he is a mercantile agent. He is distinguished from a factor chiefly by the fact that he does not have possession of the goods, or sell on his own account, whereas a factor does have actual possession of the goods and does sell on his own account. Hence if one deal with a broker he must assume

that he is dealing with an agent. An *Auctioneer* is a person authorised to sell goods on commission at public auction. He is the agent of the owner of property as seller, and becomes the agent of the buyer to sign a contract of sale. His signature binds both seller and buyer. He is bound to accept the highest *bona fide* bid if at or above reserve price. A bid may be withdrawn at any time before the fall of the hammer.

An agent for the sale of goods sometimes acts under a *Del Credere* agreement, i.e. an agreement, by which, for an extra commission, the agent guarantees that his principal shall receive the price of the goods sold on his behalf.

Any person to whom goods are entrusted by the owner for any purpose is called a *Bailee*. A factor, a carrier, a warehouseman, a borrower and a hirer are bailees.

SALE OF GOODS

A contract of sale of goods is a contract by which the seller transfers, or agrees to transfer, the ownership of goods to a buyer in consideration of a payment in money termed the price. Usually, the price is fixed by the contract; but it may be left to be determined by a third party, or some other agreed way, and then, if the third party fails to make any valuation, the agreement becomes void. But if in such circumstances the buyer has actually received the goods, he must pay a reasonable price, so also when there is no agreement as to price. What is a reasonable price is always a question of fact.

When by agreement the ownership of goods is immediately transferred from seller to buyer, the transaction is termed a sale; when the ownership is to be transferred at some future time, or subject to some condition to be subsequently fulfilled, the contract is called an "agreement to sell." An agreement to sell becomes a sale when the time has elapsed, or the condition has been fulfilled.

The expression "goods" means all tangible movable property except money. It includes growing crops, provided they are planted and gathered within the year, and growing trees if it be agreed that they shall be severed before sale and under the contract of sale; otherwise the trees are part of the land and are not goods. Shares in a company are not goods,

since a share is an intangible right to participate in the dividend of the company if and when declared.

Goods clearly identified when the contract is drawn up are called "specific goods"; if they are to be manufactured or acquired they are called "future goods."

A contract of sale may be made by writing, or by word of mouth, or partly in writing and partly orally, or be implied from the conduct of the parties. But it is always advisable that such contracts should be in writing, whether in one writing, or a series of documents connected together so as to form one contract. By the Sale of Goods Act, 1893, a contract for the sale of goods of the value of £10 or upwards shall not be enforceable by action, unless (a) the buyer shall accept part of the goods sold and actually receive the same; or (b) give something in earnest to bind the contract, or in part payment; or (c) unless some note or memorandum in writing is made, and signed by the party to be charged, or his agent in that behalf. In contracts for the sale of goods of £10 or upwards it is not therefore necessary to produce any writing if either (a) or (b) above can be proved.

The words "accept" and "receive" require explanation. There is an acceptance in the sense in which the word is here used whenever the buyer does anything in relation to the goods which recognises a pre-existing contract of sale, *i.e.* does any act in relation to the goods which he would not do unless he recognised the fact that he had entered into a contract to buy them. But "acceptance" alone, whether of the whole or a part of the goods, is not sufficient. The buyer must actually have "received" the goods. Here it is sufficient to say that there is actual receipt by the buyer (a) when the goods or documents of title to the goods are delivered to the buyer or his agent, (b) when the goods are delivered to a carrier for transport to the buyer, (c) whenever the goods are placed at the disposal of the buyer so that the seller has no longer a lien upon them for the price, (d) when, by agreement between buyer and seller, the seller has become the bailee or custodian of the goods for the buyer. It must be appreciated that both "acceptance" and "receipt" may be entirely constructive.

In a contract for the sale of specific goods the ownership of the goods passes from buyer to seller as soon as the contract

is made, unless the contract expresses a contrary intention. If specific goods are not ready for delivery, by reason that the owner has to do something to get them ready for delivery, ownership does not pass to the buyer till the seller has done what is necessary and notified the buyer of the fact. If by the contract the seller has to convey the goods to the premises of the buyer, ownership does not pass till the seller has conveyed the goods to the buyer's premises. If specific goods are ready to be delivered, but, in order to ascertain the price, the seller has to weigh, measure, test or do some other thing, ownership of the goods does not pass to the buyer till that particular thing has been done, and he is notified of the fact.

Goods are often sent "on approval," or "on sale or return." Then the goods do not become the property of the recipient until he signifies his acceptance of them, or deals with them in a way which shows his intention to accept them. If a time limit is set for approval or return, the recipient must notify his intention within the time, or within a reasonable time according to trade custom.

The ownership of future goods does not pass to the buyer till goods answering the description and fit for delivery have been appropriated to the contract and both buyer and seller have consented to the appropriation. Delivery of goods to a carrier is an appropriation on the part of the seller, unless he reserves a right of disposal, as, for example, when it is agreed that the ownership is not to pass to the buyer unless he accept a bill of exchange for the price.

It is important to fix the time when the buyer becomes owner of the goods, because, as a general rule, the goods lie at the risk of the owner. Physical possession of the goods is generally no test of ownership. Where a seller retains custody of the goods, ownership of which has passed to the buyer, the seller is bound to take good care of them. So also is a buyer if he take possession before becoming the owner. Each is answerable for loss by his negligence.

As a general rule, a buyer does not acquire a good title to goods, unless the seller was the owner of the goods, or acting under the owner's authority. But there are exceptions to this rule. A landlord may levy distress by seizing the goods of his tenant for overdue rent, and may sell the goods, and convey a good title to the buyer. Again, where a person

buys goods in "market overt," if he buys in good faith, he acquires a good title to the goods, except when the goods are stolen, and the thief is prosecuted and convicted. In the latter case the owner of the goods may recover them from any one who has them. Horses are also an exception, and a buyer of a horse in market overt does not acquire a good title if the seller's title is defective. "Market Overt" means any shop in the City of London where goods are displayed and sold in the ordinary course of the business carried on in the shop, or any regular or authorised market carried on in a particular place on fixed days.

Conditions and Warranties.—A "condition" in a contract for the sale of goods is a material term or provision of the contract, the failure to observe which by one party entitles the other to treat the contract as repudiated, frees him from his obligation under it, and usually gives him a right of action for breach of contract against the party in fault. A "warranty" is an agreement with reference to the goods sold, which is not part of the main purpose of the contract, but collateral to it. A breach of warranty by the seller does not entitle the buyer to reject or return the goods, but does give him a right to damages.

Whether a stipulation in a contract is a condition or a warranty depends upon the interpretation of the contract. As has been said, the buyer may repudiate the contract upon a breach of condition, but he may, if he choose, waive the condition, or treat the breach as a breach of warranty. But if the buyer has accepted the goods, or if the ownership of specific goods has passed to him, he can only treat a breach of condition as a breach of warranty, unless it be part of the contract that he may return or reject the goods.

A condition or warranty need not be expressed in words, it may be implied, unless the parties to the contract express an inconsistent intention. For example, there is an implied condition that the seller has the right to sell, and an implied warranty that no one has any right to interfere with the buyer's quiet possession of the goods, but this is not invariably the case. There is always an implied condition that goods sold by description shall correspond with the description; and, if by sample as well as by description, that the goods shall correspond with the sample as well as with the description.

There is generally no implied warranty as to quality or fitness, and the maxim *caveat emptor* (literally, let the buyer beware) applies, so if the seller does nothing to deceive his buyer, and gives him no warranty or undertaking as to the quality or fitness of the thing sold, the buyer cannot complain if he finds it unsuitable to his purpose. But there are exceptions to this rule. Thus where the buyer expressly, or by implication, makes known to the seller that he relies on the seller's skill and judgment, and the goods are of a kind ordinarily supplied by the seller, there is an implied condition that the goods shall be reasonably fit for the purpose.

When an article is sold under a patent or trade name there is no implied condition of fitness, but there is an implied warranty that every trade mark, or trade description applied to goods, is genuine, and not a forgery.

There is an implied condition, when goods are sold by description by a dealer in such goods, that the goods shall be of merchantable quality capable of being re-sold in the market under the description, but not if the buyer has examined the goods, and failed to discover defects which his examination should have revealed. When goods are sold by sample there is an implied condition that the goods shall correspond in quality with the sample, and that the buyer shall have a reasonable opportunity of comparing the bulk with the sample, and that the goods shall not have any defect rendering them unmerchantable which is not apparent on an ordinary reasonable examination of the sample.

Performance of Contract.—Delivery of goods and payment for them are concurrent conditions, unless otherwise agreed. But where it is agreed that goods are to be sold on credit, the seller must deliver the goods at once, or at the agreed time. The buyer becomes the owner of them on delivery, and must pay for them on the expiry of the agreed term of credit. The place of delivery is the seller's place of business, or house, but if the contract concerns specific goods, known to both parties to lie at some other place, that place is the place of delivery. If the goods at the time of sale are in the hands of a third party, there is no delivery till the third party admits that he holds the goods for the buyer. As to time of delivery, the seller must deliver within a reasonable time. What is reasonable time depends upon the facts of the particular case, e.g.

the nature of the goods, whether the seller has to do anything to fit them for delivery, the distance the goods have to be carried, etc. Delivery must be made at a reasonable hour.

Mode of Delivery. The seller is bound to deliver the exact quantity he has contracted to sell. If he deliver less, the buyer may reject the goods; but if the buyer accepts the lesser quantity, he must pay at the agreed rate. If the seller deliver more than the agreed quantity, the buyer may accept what he agreed to buy and reject the rest, or he may reject or accept the whole. If he accepts the whole, he must pay for them at the agreed rate. If goods ordered are mixed with goods not ordered, the buyer may reject the whole, or accept what he did order and reject the rest. In the case of a contract for goods to be delivered by instalments, it depends upon the facts and the terms of the contract whether the party who defaults in delivery or the party who defaults in payment has committed such a breach of contract as justifies the innocent party in repudiating the whole contract, or whether the contract stands so far as it has been carried out. If, for example, a person contracts to sell 500 tons of steel girders, delivery to be made and paid for at the rate of 100 tons per month, and the seller delivers two instalments for which he is paid, and then fails to deliver the third instalment, then, in the absence of agreement to the contrary, the buyer cannot return the 200 tons delivered, but he probably has a right of action for damages by reason of the seller's failure to deliver the balance. Contrast with this a contract for the sale of a machine to be delivered in three separate pieces at stated intervals, each piece to be paid for on delivery. Two pieces are delivered and paid for, but the seller fails to deliver the third piece. Here the buyer has probably the right to reject the two delivered pieces, to recover the money paid for them, and to damages for breach of contract.

Delivery by a seller to a carrier, whether the carrier be chosen by the buyer or not, is presumed to be delivery to the buyer. The carrier is the agent of the buyer to *receive*, but not to *accept* the goods, for usually he is ignorant of the terms of the contract. The seller must make a proper and reasonable contract with the carrier on the buyer's behalf. Thus if the goods are easily damageable, it might be improper to send them at "owner's risk" without consent of the buyer. If an

improper contract were made with a carrier, the buyer might be justified in refusing to treat delivery to the carrier as delivery to him. If goods are to be sent by sea, a seller should give sufficient notice of the time of shipment and of the carrying vessel to enable the buyer to insure the goods, or he should himself insure the goods on behalf of the buyer; otherwise the goods are at the seller's risk during transit.

Acceptance.—A buyer "accepts" the goods when he intimates to the seller that he has accepted them, or whenever he deals with the goods in a manner inconsistent with the seller's ownership, or when he retains the goods beyond a reasonable time before intimating that he rejects them. The word "accepts" is here used in a different sense from that on p. 4 when dealing with the formation of the contract. Here it means "willingness to receive goods in performance of the contract." A buyer is entitled to a reasonable opportunity of examining goods to see whether they are what he contracted to buy, and is not considered to have accepted the goods until he has had that opportunity. If the buyer is justified in rejecting the goods, and does so, he need not return them. It is sufficient if he intimates that he has rejected them. If a buyer wrongfully refuses a request to receive goods, then within a reasonable time of the request he is liable to compensate the seller for any loss caused by his refusal, and to pay for the care and custody of the goods; but this does not affect the rights of the seller when the buyer refuses to accept at all and repudiates the contract.

Rights of the Seller.—If the whole price of goods sold has not been paid or tendered, or if a bill of exchange (which term includes a cheque) has been given and dishonoured, the seller of the goods is said to be an "unpaid seller." As a general rule, an unpaid seller who has not parted with possession of the goods has a lien upon them for the price, irrespective whether the ownership of the goods has or has not passed to the buyer. And he has this right of lien even when he holds the goods as agent or bailee for the buyer, if the buyer becomes insolvent. This right of lien is gone as soon as the buyer or his agent lawfully obtains possession of the goods, or as soon as the seller delivers the goods to a carrier for transport to the buyer. But in the latter case the seller has a peculiar right called the right of *stoppage in transitu*. So long as the transit

has not come to an end, and if before it has come to an end the seller learns that the buyer is insolvent, he can call upon the carrier to stop delivery of the goods and return them to him. Transit begins at the moment when the goods are handed to the carrier; it ends when the goods have come into the hands of the buyer or anyone who takes delivery as agent for the buyer, or when, by agreement with the carrier, the latter becomes a warehouseman or bailee for the buyer. There can be no right to stop *in transitu* if the buyer has lawfully received a bill of lading or other document of title to the goods, and he transfers it to a second buyer in good faith and for value.

If, under the contract, the ownership of goods has passed to the buyer, the seller may bring an action for the price as soon as the buyer defaults in payment, no matter whether he holds the goods by right of lien, or has stopped them *in transitu*. If the goods are to be paid for on a specific day irrespective of delivery, the seller can bring an action for the price immediately after that day, whether the ownership of the goods has passed to the buyer or not, and whether goods have been appropriated to the contract or not. If the buyer wrongfully refuses to accept and pay for goods, he is liable to an action by the seller for damages. The measure of damages is the loss to the seller naturally resulting from the buyer's breach of contract; and this must always depend upon the circumstances of each particular case. Thus a photographer might recover the whole price of his work if the sitter refuse to accept the photographs he has ordered. So might a seller of perishable goods, if with reasonable diligence no alternative buyer could be found. But where there is an alternative market, the measure of damages is usually presumed to be the difference between the contract price and the market price on the day when the goods should have been accepted. When the ownership of goods has not passed to the buyer, and the buyer refuses wrongfully to accept them, the seller has only a right to damages, but when the ownership has passed, the seller may either sue for the price (if he be unpaid) or for damages.

Rights of the Buyer.—The buyer has a right to have the goods delivered to him at the time agreed or within a reasonable time. If the seller fails or refuses so to deliver, the buyer has a right of action against him for damages. The measure

of such damages is the loss to the buyer which is the direct and natural result in the ordinary course of things of the seller's breach of contract. Here also each case must depend upon its own facts. If the buyer wants the goods for a special purpose and the seller is ignorant of the fact, the buyer cannot recover "consequential" damages, *i.e.* damages for loss consequent upon his inability to carry out that purpose. But if the buyer makes known to the seller that the goods are wanted for a special purpose, and the seller fails to deliver, the latter is liable to pay damages to the buyer for the special loss he has suffered. If there is an available market for the goods, the measure of damages is the difference between the contract price and the market price at the time when the goods should have been delivered. If these prices are the same, the buyer would not be entitled to more than nominal damages, though he may still have a claim for loss suffered through delay. The buyer has a right to recover damages for breach of warranty by the seller, the measure of such damages being the loss naturally resulting from the breach. Where the contract is for the sale of specific goods, and the seller refuses to deliver, the Court has power to compel specific performance of the contract. This power is freely exercised in Scotland, but in England only when the goods are of a unique kind, and cannot be obtained elsewhere, *e.g.* a picture by a well-known artist.

Documents of Title.—There are certain well-known documents which, in commerce, are taken as proof of the possession of goods, and the right to dispose of them. Possession of these documents is treated as possession of the goods, and the goods may be sold and delivered by transferring them for value to a buyer. Transfer is effected sometimes by delivery, and sometimes by delivery and endorsement of the document. One example of such document is a Dock Warrant, which is a fully negotiable instrument. A Warehouse Keeper's Certificate is of a similar nature. Bills of Lading also belong to this class of document, but, though they have some of the qualities of a negotiable instrument, they are not fully negotiable.

Where a mercantile agent is, or has been, with the consent of the owner, in possession of goods, or of the documents of title to goods, any sale or other disposition of the goods made

by him, in the ordinary course of his business, is as valid as if he had the authority of the owner to make the sale, provided that the buyer acts in good faith without notice that the mercantile agent is acting without authority or that his authority has been withdrawn.

NEGOTIABLE INSTRUMENTS

As a general rule, one party to a contract can only assign his rights under the contract to a third person subject to any existing rights against the assignee which the other party to the contract may have. Negotiable instruments are exceptions to this general rule.

A negotiable instrument is a document containing a contract, to the ownership of which document are attached all rights under the contract. Whoever is in *bona fide* possession of such a document is presumed to be the lawful owner of it, and therefore entitled to enforce all rights under the contract. The document, and with it all rights under it, is transferred either by mere delivery or by delivery accompanied by indorsement. And the person who in good faith takes it, does so free from any rights which might be enforced against the person from whom he takes it and free from any defect in the title of such person.

A person who takes a Bill of Exchange that is complete and regular on the face of it, and before it is overdue, and without notice (if such is the fact) that it has been dishonoured, and in good faith and for value, and without notice of any defect in the title to it of the person from whom he takes it, is said to be a "holder in due course" of the bill, and his title to enforce all rights under the bill is indefeasible.

The simplest example possible of a negotiable instrument is a Bank of England note. This is a promissory note issued by the Bank undertaking to pay a stated sum of money to the bearer of the note. If a bank-note be stolen, and the thief go to a shop, buy an article, and give the bank-note in payment, going away with the article bought and the change, the shopkeeper, if he acted innocently, has a perfect right to the note, and to receive payment of it from the Bank. Other examples of negotiable instruments are a Dock Warrant, a Dividend Warrant, a Debenture payable to bearer, a Bill of Exchange (which includes a Cheque), a Promissory Note.

Bills of Lading, also, have some of the qualities of a negotiable instrument, but a Bill of Lading is not a fully negotiable instrument.

Bills of Exchange.—A Bill of Exchange (alternatively termed an Acceptance, or Draft) is described in Section 3 of the Bills of Exchange Act, 1882, as “an unconditional order in writing, addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand, or at a fixed or determinable future time, a sum certain in money to or to the order of a specified person, or to bearer.”

In business practice a Bill of Exchange is drawn by a creditor upon his debtor payable “on demand” (“At sight,” and “on presentation” have the same meaning), or at a fixed future time, or at a determinable future time. If the bill is not payable on demand, or on a fixed day, the day of payment must be computed by reckoning from the date of the bill, or from the day when the bill was presented for acceptance, and adding to the time of payment as fixed by the bill a further three days, called “days of grace.” Thus in the case of a bill dated January the 1st, payable one month after date, the due date would be February the 4th; in the case of a bill dated January the 1st payable sixty days after sight and presented for acceptance on January the 6th, the due date would fall on the sixty-third day reckoning from the 6th January. But if the last day of grace falls on Sunday, Christmas Day, Good Friday, or any day appointed by Royal Proclamation as a public holiday, the bill is payable on the preceding business day. And if the last day of Grace is a Sunday, and the second day a bank holiday, it is payable on the succeeding business day. The word “month” in a bill always means calendar month.

When the creditor has drawn his bill, he sends it to the debtor for acceptance, since clearly there can be no contract on a bill unless the debtor has signified his assent to it. The debtor signifies his assent by writing his name across the face of the bill, and usually he precedes his signature by writing the word “accepted,” but his signature is the vital thing. Further, he usually domiciles the bill, that is, he indicates the name and address of the bank who will pay the bill on his behalf on the due date. If the debtor does not domicile the bill, it is understood that it is to be presented to him for pay-

ment on the due date at his business address, or his private house.

An acceptance of the kind indicated above is known as a "general acceptance," since it does not vary the effect of the bill as drawn. But there is such a thing as a "qualified acceptance," *e.g.* where the acceptor by the form of his acceptance extends the time of payment, or reduces the amount payable, or imposes some condition to be fulfilled before payment will be made, or indicates that payment will be made at a particular place and at that place only; or, where the bill is drawn upon several persons, the qualification may consist in that some of them only accept the bill. Inasmuch, however, as a bill is intended to be a certain instrument, without ambiguity, or qualification, the drawer or other holder of a bill would be justified in treating the bill as dishonoured if he could not obtain an unqualified acceptance.

A bill is negotiated when it is transferred from one person to another in such a way as to constitute the person to whom it is transferred the holder of the bill. If it is payable to bearer it is transferred by delivery alone, if it is payable to order, the transferor must indorse as well as deliver the bill. Bills are invariably negotiated by indorsement and delivery, for the reason that every party whose name appears on a bill is liable upon it, unless he expressly disclaims personal liability. But it must be added that as regards inland bills drawn within the British Islands upon some person resident therein, it is not the practice for a trader to negotiate his customers' bills, except when such bills are discounted.

Bills of Exchange must be drawn upon stamped paper, in accordance with the regulations contained in the Bills of Exchange Act, 1882. The drawer of such a bill usually directs payment to be made to himself, but he can direct payment to some named payee, or to bearer.

Bills of Exchange given to suppliers in foreign countries are "Foreign" Bills, *i.e.* without the characteristics of an "Inland" Bill, which must be either (a) both drawn and payable within the British Isles, or (b) drawn within the British Isles upon some person resident therein.

Cheques.—A cheque is defined in Section 73 of the Bills of Exchange Act, 1882, as "a bill of exchange drawn on a banker, payable on demand." The definition of a bill of exchange

already quoted, which is fuller and more explicit, applies to a cheque. A cheque is drawn by a person upon his own Bank in favour of himself or some other person, or to bearer, and the signature of the drawer is the authority of the Bank to pay. Consequently, no acceptance is needed, but the payee (if not "bearer") has to endorse the cheque.

Promissory Notes.—A Promissory Note is defined in Section 83 of the Bills of Exchange Act, 1882, as "an unconditional promise in writing made by one person to another, signed by the maker, engaging to pay, on demand or at a fixed or determinable future time, a sum certain in money, to, or to the order of, a specified person or to bearer." In a Bill of Exchange there are primarily three parties; in a Promissory Note primarily but two. The drawer of a bill is usually liable only conditionally; the maker of a note is primarily liable. A bill of exchange accepted by more than one drawee makes the acceptors jointly liable, and in case of dishonour all must be sued; but where a note is made by two or more makers it depends upon the wording of the note whether the makers are jointly liable, or jointly and severally liable. A note reading "We promise to pay" and signed by two or more makers is a joint note; a note reading "I promise to pay" and signed by two or more persons is a joint and several note.

PATENTS

When a person invents some new article, machine, or process which is likely to be of use, and to be purchased if put on the market, he evidently has something of value, provided he is protected in the reproduction of his invention against the competition of other persons. It has long been recognised that public policy demands such protection for inventors, in order that inventive genius may be encouraged, and so a very valuable, but intangible, kind of property has come into existence in the form of patents.

A patent is a grant from the Crown by letters patent of the exclusive right of making, using, or selling some new invention. The law on the subject is contained chiefly in the Patents and Designs Acts and Rules, 1907 to 1942.

In general, a patent can be granted only to the "true and first inventor" of an invention; but a grant may be to the

representatives of a deceased inventor who dies without applying for a patent. A grant may also be to two persons jointly where one only is the true and first inventor.

An inventor is one whose mind has performed the act of invention; hence a corporation, which has no mind, cannot be an inventor. Also, if an invention be suggested by any person within the realm to another, the latter cannot be the inventor. But in law a person who receives an invention from another outside the realm and is the first to introduce that invention into the realm is an inventor; so that "true and first inventor" includes true and first importer. The realm in this connection means the United Kingdom and the Isle of Man. A person who buys his secret from an inventor is clearly not the inventor, and is not entitled to a patent; the true inventor must apply for the patent, and can then assign it to a buyer; hence a corporation may become the owners of a patent by purchase. A grant may be made either to a British subject or to an alien, and gives protection within the realm.

It is only a manufacture that can be patented. It must be something which can be handled or a process for making something which can be handled. Invention is not the same thing as discovery. To be entitled to a patent a person must have produced some new and useful thing or result, or some new and useful method of producing an old thing or result. A principle of nature, discovered but not carried out in a manufactured thing, cannot be patented. Thus, when Galvani discovered the effect of an electric current from his battery on the leg of a frog, he made a great discovery, but did not invent anything which could be patented. Again, the discovery of a new use for a machine already employed for another purpose, as the application of an old tool to new materials, is not an invention.

The invention must be new, in the sense that it has not been made known to the public, or publicly manufactured, used, or sold within the realm before the date of the patent. Use by way only of experiment by the inventor for the purpose of testing his invention is not public use; but if it be used before the date of the patent, even by the inventor himself, for profit, no patent can be granted.

If once the public are in a position to acquire knowledge

of the invention, a patent cannot be granted. An invention may be made known to the public in many ways—for example, when it is described in any book or document to which the public have access. If an invention is made known to the public, without the inventor's knowledge or consent, by some person who has obtained the information from the inventor, a patent may nevertheless be granted to the inventor if he apply for protection as soon as reasonably possible after he learns of the publication.

Any person who claims to be the true and first inventor of an invention may apply for a patent. This he does by filling up a form of application (which may be obtained at a post office) and sending it to the Patent Office in London. It is, however, most desirable, and almost essential, to have the application prepared by a Chartered Patent Agent.

The application must be accompanied either by a provisional specification or by a complete specification; and the Comptroller may require drawings to be supplied which then form part of the specification. When the application is in respect of a chemical invention, samples and specimens may be required. Every specification must commence with a title which fairly describes the nature of the invention. A provisional specification describes merely the nature of the invention. A complete specification must describe its nature particularly, in sufficient detail to enable the invention to be manufactured after the privilege has expired.

If a provisional specification is lodged with the application, a complete specification must be lodged within twelve months; but the Comptroller may grant an extension of time not exceeding another month. Failure to send a complete specification within the time prescribed is equivalent to abandonment of the application.

In every complete specification there must be a clause making definite "claims" to what is alleged to be an invention entitled to a patent. Everything new in the invention must be distinctly claimed and nothing old must be claimed as new.

Unless a complete specification be accepted within fifteen months of the application the application becomes void; but an extension of time, not exceeding three months, may be obtained. The applicant is entitled to notice of acceptance

as soon as his application is accepted. The Comptroller will then advertise the acceptance in the official Journal (Patent), and thenceforward the specifications and drawings are open to inspection at the Patent Office. From the date of acceptance the applicant has the same rights and privileges as if the patent had been sealed, except the right of bringing an action for infringement.

Within two months of the date of the advertisement of an acceptance any person may give notice at the Patent Office of his opposition to a grant. Such opposition can only be on certain grounds, including : (1) that the applicant obtained the invention from the person opposing; (2) that the invention was claimed in a complete specification of prior date, but within fifty years; (3) that the invention is not sufficiently described in the complete specification; (4) that there is disconformity between the complete specification and the provisional specification, and that the invention claimed in the former is the same as one the subject of an application made by the person opposing between the deposit of the provisional and the deposit of the complete specification.

A register is kept at the office of every patent granted, containing various particulars—such as the name and address of the patentee, particulars as to any assignment, licence, extension, or revocation, and statements as to the payments or non-payment of fees. This register is open to inspection by the public, and is *prima facie* evidence of the matters contained in it. In the Act, the word “patentee” means the person for the time being entered in the register as the grantee or proprietor of the patent.

The protection afforded by a patent lasts for sixteen years from its date. This date may be extended by an order of the High Court on the patentee's petition, which must be presented at least six months before the expiration of the sixteen years. Any person interested is entitled to oppose the extension asked for. The Court, in dealing with the matter, inquires particularly whether the patentee has been adequately remunerated for his invention, and takes into consideration the value of the invention to the public and all the circumstances of the case. An extension may be for a further period of not exceeding five years (or, in exceptional cases, ten years), or else the Court may order the grant of a new patent subject to such

restrictions and conditions as the Court thinks fit. No second extension can be granted. Certain fees are payable during the period annually after the fourth year. If a patentee fail to pay any fee at the time prescribed, the patent comes to an end, but an extension of the time for payment, not exceeding three months, may be obtained.

The patentee may grant a licence to any person to work and use the patent. Such licence may be limited either as to place or time or otherwise. A licence ought to be by deed, but may be effected in any other way.

A patentee may assign to another all or a portion of his right. Such assignment must be by deed; and should be entered in the Register in order fully to secure his interest to the assignee.

An assignee may grant licences, he may petition for an extension of time, or he may bring an action for infringement.

Where a patentee abuses the monopoly rights conferred upon him, any person interested may apply to the Comptroller for relief. The patentee will be held to have abused such rights if, without good excuse, the invention is not being worked on a commercial scale in the United Kingdom after four years from the grant of the patent; if the working of the invention on a commercial scale is prevented or hindered by the importation from abroad of the patented article; if the demand for the patented article is not being met adequately and on reasonable terms; or, if the trade or industry of the United Kingdom, or the establishment of a new trade or industry in the United Kingdom, is prejudiced by the refusal of the patentee to grant licences on reasonable terms. In cases of abuse the Comptroller may order licences to be granted on such reasonable terms as he thinks fit, or he may revoke the patent.

If any person infringe the exclusive right of the patentee to manufacture, use, or sell the patented thing, such person is liable to be sued by the patentee in an action at law. The defendant in an action for infringement may deny that the plaintiff was entitled to a grant, and may counter-claim a revocation of the patent.

The Government of the United Kingdom has entered into arrangements with the Governments of most foreign states and most of the countries comprised within the British Empire for mutual protection of inventors. Under these arrangements

a person who has applied for protection for an invention in one of these countries may obtain a patent in this country in priority to all other applicants. The application must be made here within twelve months of the application in the other country. The application is made in the same manner as the ordinary application, but the accompanying specification must be a complete one. No damages can be recovered by any such applicant for any infringement occurring before the acceptance of the specification in this country.

DESIGNS

There is kept at the Patent Office a Register of Designs. In this any person who claims to be the owner of any new or original design may apply to have such a design registered. The law is contained in the Patents and Designs Act and Rules, 1907 to 1942, and is intended to protect novelties of an industrial nature which do not involve the invention required for the grant of a patent.

“Design” in the Acts means any design applicable to any article of manufacture or substance, whether natural or artificial. It may be applicable for the pattern, or for the shape or configuration, or for the ornament of the article. It may be applicable by printing, embroidering, weaving, sewing, modelling, casting, embossing, engraving, staining, or any other means, manual, mechanical, or chemical. The word does not include any mode or principle of construction or any mechanical device, or designs for sculpture or designing of an artistic nature forming part of a work which is the subject of copyright. The designs contemplated are of an industrial nature, and the word “design” must be interpreted in a wide sense.

No design may be registered unless it is new or original in the United Kingdom. If it has ever been published in the United Kingdom before the application it cannot be registered. A design is something which can be supplied to an article. This, however, includes the shape in which an article is made; for a design applicable to a thing for its shape can only be applied to a thing by making it in that shape. Thus, a design may be registered for the shape of an iron door of a furnace, or for a coffin plate of a new pattern.

Whether any design is new or not is a question of fact.

This question can only be answered by the eye. It is also often a question of degree. If a design, although not identical with another, is very like it, it is sometimes very hard to draw the line between colorable imitation and dissimilarity.

The application for registration must be accompanied by representations or specimens of the design. The Comptroller may either register the design or refuse to register; but if he refuse, the applicant may appeal to the Board of Trade. If the Comptroller accept the design, it is entered in the register with the name of the applicant and as of the date of the application; and a certificate of registration is granted. Designs are registered in a number of different classes of goods. But any design may be registered in more than one class. When a design is registered the registered owner has copyright in the design for five years from the date of registration. This period, however, may be extended by the Comptroller for a second and for a third period of five years.

Before delivery on sale of any article to which a registered design is applicable the owner must cause each article to be marked in the way prescribed, so as to show that it is registered. The mark is the word "registered" or an abbreviation of the word, and in most cases also the number of the design.

It is unlawful for anyone, during the existence of a copyright, to apply the design, or any obvious imitation thereof, to any goods without the licence or written consent of the registered owner. Anyone who contravenes this provision is liable to be sued by the owner for a penalty not exceeding £100, or else for an injunction and damages.

TRADE MARKS

A trade mark is a mark used by a trader upon or in connection with his goods, in order to indicate that they are the goods of that particular trader. Such mark may be a device, brand, label, name, word or such like, or a combination of such things.

It is provided by the Trade Marks Act and Rules, 1905 to 1919, that there is to be kept at the Patent Office a Register of Trade Marks in which are to be entered all registered trade marks, with the names and addresses of their owners, notifications of assignments, and other matters. This register is open to the public, and anyone may obtain a certified copy

of any entry on payment of a fee. There is also a register at Manchester for cotton goods, and at Sheffield for cutlery. Marks registered at these local registries are, however, also registered at the Patent Office.

A trade mark can only be registered in respect of particular goods or classes of goods on the application of the owner of the mark. In order to be registered it must contain or consist of at least one of the following essential particulars : (1) the name of a company, firm or individual represented in a particular manner, or the signature of the applicant or some predecessor in his business ; (2) an invented word or words, or a word or words having no direct reference to the character or quality of the goods, and not being a geographical name ; (3) any other distinctive mark ; but a name or word (other than mentioned) cannot be deemed a distinctive mark, except by order of the Board of Trade or of the Court in the case of an old mark which has from long use come to distinguish the goods of a trader.

An invented word is one which is new at the time of registration or when first used by the person applying to have it registered. An invented word may be registered although it conveys some meaning, notwithstanding the restriction against registering words referring to the character or quality of the goods. Mere misspelling is not sufficient to make a word an invented word. Among well-known invented words which have been held to be good by the courts may be mentioned "Kodak" and "Mazawattee." On the other hand, "uneeda" and "pirle" have been held not to be invented words. Words which cannot distinguish the goods of any particular person cannot be registered, *e.g.* "pain killer." The colour of a mark may be part of the distinctive character of such mark. No mark may be registered which so closely resembles a mark already registered as to be calculated to deceive. *See p. 34.*

Any person claiming to be the owner of a trade mark may apply in writing to the Registrar to have such mark registered. If the Registrar refuse the application, or accept it only on conditions as to amendment or modification, he must if required state in writing the grounds of his decision, and the applicant may appeal from such decision either to the Board of Trade or to the Court.

When the application is accepted it must be advertised

by the Registrar in the *Trade Marks Journal*.²⁵ Within a month of the date of the advertisement any person may give notice to the Registrar of opposition to the registration, stating the grounds of his opposition. The question is then decided by the Registrar, after hearing the parties, if they so demand; and there is an appeal from the Registrar to the Court, or, if both parties consent, to the Board of Trade.

Registration is effected for fourteen years, but may be renewed from time to time indefinitely.

The registration of a person as proprietor of a trade mark gives him the exclusive right to the use of such mark upon or in connection with the goods in respect of which it is registered, and is *prima facie* evidence of the validity of the original registration. After the expiration of seven years the original registration must be taken to be valid in all respects unless it were obtained by fraud. If any person adopts or uses the mark, or a colourable imitation of it, the registered owner has a right of action against him for damages and for an injunction. The registered owner has power also to assign the trade mark; but it can only be assigned in connection with the goodwill of the business concerned in the goods.

Any person who represents a trade mark as registered which is not so is liable on summary conviction to a fine of £5. It is a much more serious crime, for which the guilty person may be indicted and sentenced to imprisonment for two years in addition to a fine, falsely to apply to goods any mark so nearly resembling a registered mark as to be calculated to deceive, to forge any registered trade mark, to make or have in possession any block or die for forging a registered trade mark, or knowingly to sell or expose for sale any goods to which a forged registered trade mark is applied. It is also an offence to sell imported goods bearing the name or trade mark of a British manufacturer or trader unless accompanied by an indication of origin.

Quite apart from the law as to trade marks, no one may use any mark or name or get-up so as to deceive the public into thinking that goods sold by him are the goods of another person. Anyone so "passing off" his goods as those of another is liable to an action for an injunction and for damages; and it is not necessary to prove that he had a fraudulent intention. In an extreme case a man may even be forbidden to use his

own name in connection with the sale of goods. This sometimes happens where by long use the name of some trader has become so firmly associated with goods of a certain class and quality that any other trader of the same name putting similar goods on the market under his name must cause confusion.

Where, in the case of a patented article, a word trade mark is the only practical name of the article, all right to the exclusive use of such trade mark comes to an end upon the expiration of the patent, and thereupon such word ceases to be a distinctive mark and may be removed from the register.

COPYRIGHT

Copyright is that exclusive right which is possessed by the author of a book or other composition to publish his work or multiply copies of his work. It resembles the right conferred by a patent in that it enables persons of ability to reap profit from their ability by securing them the control of reproduction.

Copyright differs from the right conferred by a patent in that it is not a privilege and is not conferred. Marconi has patented some wonderful inventions, but if he had not invented these things probably some other man of science would have done so; but if Dickens had not written *Pickwick* certainly no one else would ever have written that immortal work. The author of a book, therefore, is a creator, not a discoverer or inventor, and what he has created is his property. This property he can keep to himself if he please. If he do not choose that it shall be made known to the public, no other person may make it known; and the common law gives him a right of action for damages against any person who publishes his work without his consent.

Protection of the author is afforded by the Copyright Act, 1911, under which Act now copyright can alone be claimed in the matters to which it refers. The Act gives copyright in every original literary, dramatic, musical and artistic work throughout the British Empire, where such work was first published in the Empire, and also in the case of an unpublished work where the author is a British subject or resident within the Empire. In the term literary work, besides books, magazines, newspapers, etc., is included maps, charts, plans, tables and compilations.

“Copyright” in the Act means the sole right to produce

or reproduce the work or any substantial part thereof, in any material form whatsoever; to perform, or in the case of a lecture to deliver, the work or any substantial part thereof in public; and in the case of an unpublished work to publish the work or any substantial part thereof. It includes the right of translation, of converting a dramatic work into a novel or vice versa, and of mechanically performing or delivering any literary, dramatic or musical work by means of any record, perforated roll, cinematograph film or other mechanical contrivance. Publication of any work means the issue of copies of the work to the public; and does not include the performance in public of any dramatic or musical work or the delivering in public of a lecture. Hence if a man write a play he also has the right to authorise its performance in public (for copyright includes stage right), but performance is not publication, so that the play remains an unpublished work, until the author chooses to issue copies of his work to the public.

It is to be noticed that there is no necessity for an author to claim a copyright. It is his property from the moment the work comes into existence.

Infringement consists in doing anything, the sole right to do which is conferred by the Act upon the owner of the copyright, without the consent of such owner. The making or importing of any copy of a work in which copyright exists, or of any colourable imitation of such work, is infringement; so is the selling or offering for sale in the way of trade of any work by any person who knows that such work infringes copyright.

Extracts may be made from any work for the purpose of private study, research, criticism, review or newspaper summary, provided that it is dealt with fairly for such purpose; and what is fair in any particular case must be a question of fact.

There is no copyright in facts, therefore news may be repeated. Neither is there copyright in law. But there may be copyright in the arrangement of the words in which the facts are stated or in the terms in which the law is expounded.

It is by no means necessary that a literary work should have any kind of literary merit in order to be the subject of copyright. A book may be a mere compilation from sources of information open to anyone. But a second compiler must go

to such sources for himself and may not copy a book. So a street directory or a trade catalogue of articles for sale may be copyright. A newspaper may publish a report of a political speech made at a public meeting without infringing the speaker's copyright; but the shorthand writer who makes a verbatim report of the speech (or his employer) owns the copyright of the report, and no other paper may reproduce it. A newspaper may also publish a verbatim report of any lecture delivered in public unless the report is prohibited. It may be prohibited by a notice posted at the entrance to the building, and also near the platform. A newspaper may publish a fair summary of any speech or lecture delivered in public.

Copyright does not last for ever. It subsists, however, during the life of the author and for a period of fifty years after his death. But when twenty-five years have elapsed from the author's death, any person may reproduce the work for sale provided he pay royalties to the owners of the copyright at the rate of 10 per cent. on the published price; and provided he observe regulations made by the Board of Trade as to notice, and as to the mode, time, and frequency of payment of royalties.

If at any time after the death of an author the public are unable to obtain copies of a work which has been published and this is due to the owner of the copyright refusing to allow the work to be reproduced, the owner may be ordered by the Privy Council to grant a licence for the reproduction of the work on such terms as they think fit.

The author of a work is presumably the first owner of that work. Where, however, an engraving, photograph or portrait is made for valuable consideration in pursuance of an order, the owner of the copyright is the person giving the order. Again, when the author is in the employment of another person and makes the work in the course of that employment the employer is the owner of the copyright. Thus, when the proprietor of a newspaper employs a shorthand writer to make a verbatim report of a political speech, the copyright of the report belongs to the proprietor. But when the work is an article or other contribution to a newspaper or magazine the author has a right to restrain the publication of the work in any other form, unless it be agreed otherwise. If the owner of a copyright is liable to pay royalties to the author of the

work and becomes bankrupt, his trustee in bankruptcy can only sell copies of the work on terms of paying the author the same royalties as the bankrupt would have been required to pay.

Copyright may be freely assigned provided the assignment is in writing. An assignment may convey the owner's whole right, or it may only convey a limited right, *e.g.* for a certain time or for a particular country. But no assignment by an author, unless he make such assignment by his will, has any effect beyond twenty-five years from the death of the author. At the end of the twenty-five years the copyright reverts to the author's representatives.

CHAPTER II

THE LIMITED COMPANY AND PARTNERSHIP

The structure of industry is examined in this chapter in its unit form, especially that of the limited company. The rules and regulations under which such companies are organised and operated should be viewed as the expression of long experience in the conduct of business. The circumstance that Company Law is mainly directed to the protection of the public, either as prospective or actual shareholders, should not lead the student to lose sight of the fact that statutory requirements are not in conflict with efficiency. A few of the requirements may be unnecessary for purposes of internal administration ; but, in the main, company law constitutes a very important contribution to the science of management and, if studied from that angle, it will be found to be of absorbing interest.

THERE are many businesses initiated, owned and operated by one individual who carries all financial and administrative responsibilities, employing such assistants as may be necessary. More often than not, however, it is found necessary or advisable for two or more persons to act together in establishing an enterprise. In this event it becomes imperative to agree beforehand on the respective responsibilities of each of the parties, more particularly in regard to the financial stake, and the liabilities of each partner as between themselves. When all parties are able and prepared to provide agreed proportions of the initial capital, their respective liabilities and management powers (*inter se*) may, and usually do, find expression in a deed of partnership. But, to an increasing extent, the capital resources required to found a new enterprise and set it going are too great for a single individual, or for persons acting in partnership, and the appropriate organisation is then that of a limited or joint-stock * company.

* "Stock" had not formerly its present limited meaning. A joint-stock company meant originally a partnership in which all the members paid their funds to a common stock for the purpose of trade, as distinguished from "regulated" companies, trading with foreign parts, in which, subject to bye-laws, each member traded on his own account (*Higher Book-keeping and Accounts* by Cropper, Morris, and Fison).¹⁰

In the older professional fields, except that of barrister, the basis of joint ownership and working is that of partnership. Barristers may not act in partnership; nor may solicitors, accountants, etc., form themselves into limited companies. Possibly the explanation of this is to be found in the need for secrecy (though clients' affairs can be treated equally confidentially by a limited company, *e.g.* a bank), but mainly, perhaps, because in a partnership the liabilities of the partners are unlimited, and there is a greater presumption of permanence in the enterprise; for the setting up of a professional practice (as, for example, by solicitors) is an enterprise, even if not in the usually accepted category of business enterprises.

Every business enterprise comes into being because somebody has conceived an idea, involving, perhaps, the production of a new kind of article, or a new way of making an existing article, or the development of a new source, or a new treatment of raw materials, or perhaps only because it is desired to develop some successful existing business which, in the opinion of the originator and his advisers, is likely to meet with increased public acceptance and produce increasing profits. In modern times when it is desired to exploit some idea with commercial possibilities it is usual to decide upon the formation of a limited company, because the necessary capital can most readily be found for an enterprise taking that form.

Before, however, the first formal steps for company formation can be taken, there is a great deal of preliminary investigation to be done; and this initial work, often lost sight of by the student of Company Law, frequently not only takes a great deal of time, but also determines, by the degree of its thoroughness, the future success or non-success of the enterprise.

This particularly applies to the thorough examination by the originator, and if possible by expert advisers, of the whole project from a practical point of view, and from all aspects. It is of the utmost importance that the potential market should be studied scientifically, and that on the basis of an estimated volume of sales the probable expenditure under all heads should be carefully calculated. In this connection it becomes desirable to formulate, however tentatively, a detailed budget on the lines indicated in Chapter VIII.* The outline budget must not only cover the cost of operating

* See p. 180.

the business once it is a going concern, as *e.g.* under the headings of work in progress, stocks in hand, and customers' credits, but also of the initial capital investment necessary to finance buildings, equipment, etc.

Another preliminary step of first importance is to seek the advice of financial experts as to the possibilities of obtaining capital sufficient for the estimated requirements, and also the best and cheapest source for its supply. Consideration will also be directed at that stage to the important point whether the proposed company should be registered as a Private or a Public Company (see p. 47). One factor affecting decision on this point will derive from the advice given as to the best source for obtaining the required funds. An indication that persons of specialised interests are more likely to subscribe than the general public will obviously influence decision in favour of the Private Company, as would also an intention that the project should first be tried out in a restricted way. An example of this is that of a private syndicate comprising a few investors which may take up, say, certain patent rights, develop the invention to a working stage, and then sell their interest to a Public Company for manufacture and sale on a larger scale.

It cannot be too strongly emphasised that these preliminary inquiries and calculations are of prime importance, and it should not be forgotten that they frequently occupy a period of months, and so must be duly allowed for by anyone contemplating the flotation of a company.

In preparing for operation on a substantial scale, the originator of an idea does not usually himself carry out the steps outlined above. This part of the work is frequently taken over by a professional promoter.

The Promoter.—This term is not a legal definition or description: "Promoter" is really only the name given to the performer of the various business operations necessary for bringing a company into existence. It is only as a matter of convenience, and in order to make use of all available experience, that the "promoter" employed is often a professional man carrying out such work for new enterprises as a whole-time occupation. In law a promoter (professional or otherwise) stands in a fiduciary relationship to the company which he is creating, and he may therefore not make any

profit at the expense of the company without its knowledge and consent. A promoter may sell his own property to a company ; but, in such case, he must either procure the appointment of an independent Board of Directors, or make full disclosure to intending shareholders of his interest in the matter by a prospectus or similar means.

FORMS OF BUSINESS ORGANISATION

In the foregoing paragraphs it has been assumed that the form of organisation, which the new undertaking would adopt, would be the Limited Company, either Private or Public ; but it is appropriate to remind the student of the other forms of organisation which exist, and have separate legal recognition—and, in particular, to give some information regarding partnership.

The Limited Company itself has two main features which, in greater or smaller degree, distinguish it from other forms of organisation—namely, that the liability of its members is limited, and that the company has an “individuality” independent of, and separate from, that of its members.

Partnership.—The essential character of partnership, in law, is that no separate individuality is assumed by the “firm.” The firm is made up of and consists of the persons who are the partners. Thus each partner is, in effect, in any action he takes, the agent * of the others. Each, as a principal, is therefore liable to the full for any partnership debts which any other partner incurs, and in the last resort his private property may be seized in settlement of the firm’s debts. Because the partnership firm has no separate existence, partners cannot make contracts with the firm, in the way, for example, that a shareholder can with the limited company in which he holds shares.

The principle of unlimited liability of partners is, however, modified to an extent by the Limited Partnership Act of 1907, under which a firm may have both general partners, with unlimited liability, and limited partners, who bring in a specified amount of capital and who have no liability after once completing this contribution. This Act enables “sleeping” partners to obtain the protection they often need. Such partners

* See p. 11.

cannot take part in the management of the business or bind the firm, and are indeed in these respects in a very similar position to the shareholders of a company. It should be added that, in point of fact, the Limited Partnership Act has not been taken advantage of to any great extent.

There is a large body of law regarding partnerships, but the situation may be summarised by quotation from *Higher Book-keeping and Accounts*, by Cropper, Morris, and Fison,¹⁰ of a table showing the distinctions between a Partnership and a Limited Company.

PARTNERSHIP

(a) The partners in a firm are individuals acting together in partnership as they may mutually agree amongst themselves, or, in the absence of agreement, in accordance with the Partnership Act, 1890, or agreement may be implied by a course of dealing. If they so desire, partners may vary the terms of the Act in certain respects. The capital of a firm may be increased or decreased by agreement between the partners, or by trading gains or losses. A firm is not in England a separate entity, although in Scotland it is. The members of a partnership may not exceed twenty in number, and if the business carried on be banking they may not exceed ten.

(b) The liability of a partner (except a limited partner) is co-extensive with the whole of his property. Every partner in a firm is jointly liable with his co-partners (in Scotland severally also) for all the debts and obligations of the firm incurred while he is a partner. Judgment obtained against a firm is judgment against all the partners of the firm jointly.

(c) All partners (except limited partners) can take part in the management of the business of the firm; and all have access to its books. A partner can bind the firm and his co-partners so long as he acts within the ordinary scope of the business, or within

LIMITED COMPANY

(a) A company is a legal entity in itself, distinct from the members who hold shares in it. It is governed by the Act of 1929,* which it cannot override. Its powers are determined by its Memorandum of Association, and can be altered only by sanction of the Court. Its capital is fixed by its Memorandum and cannot be altered except under the powers conferred by Statute. There is no limit to the number of shareholders (except in private companies), but the statutory minimum number of shareholders must be maintained, i.e. seven in a public and two in a private company.

(b) The liability of a shareholder is limited to the amount which he has agreed to contribute to the capital of the company, and when he has paid that amount to the company, no further liability attaches to him. Judgment obtained against a company is not judgment against the shareholders individually, but against the company in its corporate capacity.

(c) A shareholder has no power to bind the company, or to bind his co-shareholders; nor has he any right to take part in the management of the company, or to inspect its books, except as may be allowed by the Articles. The conduct of a company's business

* Now by the Act of 1948.

PARTNERSHIP

the special authority delegated to him by his co-partners. He is an agent of the firm and his co-partners for the purposes of the business of the partnership. A limited partner, however, can only "advise," for, if he takes any part in the management of the business, he becomes liable as a general partner.

(d) A partner cannot, except by agreement with his co-partners, substitute another partner for himself. A limited partner, however, cannot prevent a general partner from transferring his share. The death, bankruptcy, or retirement of a partner (where these events do not result in the winding-up of the partnership), or the bringing in of a new partner, has the effect of creating a new firm.

(e) It is not obligatory on a firm to appoint auditors or to hold meetings.

(f) Partners can make any agreement they choose, and can vary the terms of the partnership when and as they please.

(g) There is no Statutory provision requiring a partnership to keep books of account, although it is practically essential, and the failure to keep books may be an offence if the firm becomes bankrupt.

(h) A partnership can be brought to an end by agreement at any time.

LIMITED COMPANY

devolves upon the Directors. The acts of the Directors are governed by the Articles of the company, and these cannot be altered except by special resolution passed by the shareholders in General Meeting. A shareholder's influence is confined to his vote on the occasion of ordinary or extraordinary General Meetings convened by the Directors, or in certain cases provided by Statute by the members themselves, if the Directors default in calling such meetings.

(d) A shareholder can transfer his shares as he pleases, subject to the Articles of Association, which, in the case of a private company, must restrict transfers. No matter what changes may occur in the personnel of the shareholders of a company, the corporation remains the same entity.

(e) A limited company must annually appoint auditors, and must hold certain meetings.

(f) Companies are bound by their Memorandum and Articles, and though the latter may be varied there are some things not allowed, e.g. the company may not buy its own shares.

(g) A limited company must keep proper books of account, and prepare a Profit and Loss (or Income and Expenditure) Account and Balance Sheet every year. Severe penalties attach to default in this respect.

(h) A limited company can only be brought to an end by being struck off the Register by order of the Court, or where it has ceased to function, or by being wound up by the Statutory process.

Higher Book-keeping and Accounts.¹⁰

Incorporated Companies.—Beyond Limited Companies and Partnerships, there are various other forms of organisation, varying in the extent to which members are liable for the debts of the organisation, and in the extent to which the

organisation is a separate legal entity. Of these the following call for mention here, while what may be called wider forms of organisation are considered in Chapter III.

Incorporated under the Act of 1844.—Companies incorporated under this Act achieve to a certain degree separate existence—they may hold property and sue in their own name. The liability of members, however, remains unlimited, and in this respect they are but large Common-law partnerships.

Incorporated by Royal Charter.—A Corporation so created—the Bank of England is the chief example—is the first form considered where a separate individuality exists. In this case individuality is complete. The Corporation can do anything that an ordinary individual can do. Even if the Charter expressly prohibits or does not authorise a particular act, the Corporation can, nevertheless, do the act, but it thereby renders its Charter liable to revocation. The share or stock holders in such a company are not liable for the Corporation's debts.

Incorporated by Special Act of Parliament (Statutory Companies).—Certain companies which need compulsory powers to take land, etc. have to be incorporated by special Act of Parliament. Various public statutes have been enacted containing general provisions for various types of enterprise, and in each private Act one or more of these Acts are incorporated. Examples of these general Acts are :

Companies Clauses Consolidation Acts, 1845–1889;
Land Clauses Consolidation Act, 1845.

The essential characteristic of a Statutory Company is that its powers are laid down in its private Act, instead of in the Memorandum of Association as with ordinary companies. The borrowing powers of such a company are limited, and so are the powers of the company to lease its land. Liability of members is in effect limited, although in a rather different way from the limitation in an ordinary limited company.

Building Societies, Industrial, Provident and Friendly Societies.—These are not, properly speaking, companies, and are not governed by the Companies Act. They are subject to special Acts. The liability of members is, however, limited to their holdings.

Unlimited Companies.—Such companies are so rare as to

be, practically speaking, non-existent. In them, as the description implies, the liability of the members is not limited in any way. They are thus in effect in the same position as companies incorporated under the Act of 1844.

The predominant place held in the organisation of British Industry and Commerce by the Limited or Joint Stock Company makes it necessary that the student should become acquainted with the main outlines of what is called Company Practice. Company Practice is, in short, the putting into effect of Company Law. Company Law is now embodied in the Companies Act, 1948, which is a consolidating Act combining the Companies Act, 1929 with the new law contained in the Companies Act, 1947. Since the first Companies Act of 1862 numerous amending Acts have been passed and the law on the subject has been twice previously consolidated, namely, by the Acts of 1908 and 1929.

The notes that follow are grouped under six headings :

- Company Management;
- Company Formation;
- Company Statutory Requirements;
- Share Holdings and Dividends;
- Debentures;
- Alterations of Capital.

For further information, the student is referred to *Secretarial Practice*²⁷ by Head, Fausset, and Wilson, and *Higher Book-keeping and Accounts*¹⁰ by Cropper, Morris, and Fison.

Classes of Limited Companies.—Limited Companies may be subdivided into those limited by guarantee and those limited by shares.

Companies Limited by Guarantee.—In such companies each member undertakes to contribute a stated sum in the event of the company being wound up. Usually, the capital of this type of company is not divided into shares; it is not even essential for such a company to have any specified capital.

These companies are not very common and are usually created for what may be called non-business purposes, e.g. charitable concerns not established in order to make profits, and often not allowed to do so, such as certain educational institutions.

Companies Limited by Shares.—These are companies in

which the liability of the members (*i.e.* shareholders) is limited to the total value of the shares held by each. When all calls on any member's shares have been met (in other words, when the shares are fully paid up), no further liabilities attach to the member in respect of his shareholding. Such companies may be Public or Private.

The distinctions between the two, which are of great practical importance, hinge on the conceptions inherent in the name "Private." The Private Company is in essence a business association of persons known to each other, and as such is not required to publish to the world at large much of the information demanded of a Public Company. In order that this privilege may not be abused, the size, in point of number of members, of a Private Company is strictly limited. With this governing principle in mind the following brief list (which is complete only as to major items) of the differences between a Private and a Public Company will be readily understood.

The Memorandum of Association of a Public Company must be signed by at least seven persons; with a Private Company the minimum is two.

A Public Company may have any number of members; a Private Company is limited to 50 (plus past or present employees admitted as members of the Company).

A Public Company must issue a Prospectus or file a Statement in lieu of Prospectus. Not only is a Private Company not required to do this, but it is, in fact, most strictly forbidden to invite the general public to subscribe for its shares.

No Statutory Meeting or Statutory Report, and no minimum subscription is required for a Private Company.

A new Private Company can commence business immediately on the granting of the Certificate of Incorporation; a Public Company has to await the completion of certain formalities and the issue of a Certificate that it is entitled to commence business.

A Private Company can, by complying with the conditions laid down in Section 129 of the Act, obtain exemption from some of the requirements of the Act, *e.g.* the necessity of annexing a copy of the Balance Sheet and Auditors' Report to the Annual Return. Such a Company is then known as an Exempt Private Company.

COMPANY MANAGEMENT

Apart from the technical aspect of Management—identified with Production, Development, Distribution, and Conservation (see Vol. II)—and apart from the functions of the General Manager, where one is appointed, the everyday affairs of the Company, especially in its relations with the outside world, are in the hands of its Directors and its Secretary.

Directors.—In addition to references, in the following pages, to the provisions of the Companies Act, 1948, the more usual duties of Directors may be briefly noted. Directors are officers and servants of the Company, even though they control its destinies; and their position is that of trustees, as well as of agents. In many cases, the office of Director of a Public Company is not a full-time appointment; and, generally speaking, the Directors attend Board Meetings at regular intervals (say, monthly) with an occasional extra meeting for some urgent purpose.

At the regular Meetings, the business is partly routine and partly special. *Routine business* consists in the confirmation of Minutes of the previous Meeting; the consideration and (if in order) the ratification of transactions in the Company's Shares—approval of transfers, signature and sealing of new Certificates, etc.—and the careful scrutiny and study of reports on the progress of the Company's activities and programme, and on its current financial position. Such reports may, with advantage, take some such form as is referred to under "Higher Control in Management"—see p. 269. *Special business* takes many forms, dependent upon the Company's work. Only a few of the more standard aspects of special business can be mentioned here—e.g. appointment, promotion, and discharge of principal executive officers; deciding the main lines of the Company's policy; taking such appropriate action as may seem to be indicated by the tendencies revealed in the reports above referred to; approval and execution of important contracts *re* purchase or sale of goods, machinery, land and buildings, etc.; and the annual consideration and settlement of the Company's Accounts and the Directors' Report to the members (the Shareholders) thereon.

The Directors appoint one of their number to be Chairman, in which capacity his principal duty is to preside over the Board Meetings and the Annual General Meeting.

The office of Managing Director, where it exists, is usually a full-time appointment, calling for outstanding administrative capacity. Occasionally, but increasingly, appointment is made of one or more of the senior executive staff to the Board of a Company.

The Companies Act, 1948, provides that a Director who is in any way, whether directly or indirectly, interested in a contract or proposed contract with the Company, must declare the nature of his interest at a meeting of the Directors of the Company. Many Companies provide specifically in their Articles of Association that a Director may be so interested if he discloses the fact in advance; but in such a case it is customary for the Articles to provide that he be debarred from voting.

The fees of Directors for the usual type of attendance and duty are settled by the Members at each Annual General Meeting, if not fixed by the Articles of Association. The Articles generally authorise the Directors in Board Meeting to fix the salaries to be paid to the Managing Director, or to other Directors for full-time or special services.

With few exceptions, such as may be made in the Articles of Association, one-third (or the number nearest thereto but not exceeding one-third) of the Board retire annually, but may be re-elected if eligible, and this is the arrangement provided in Table A (see p. 55).

The Companies Act, 1948, provides that a director of a public company shall automatically vacate his office at the conclusion of the Annual General Meeting following his seventieth birthday. The Articles may, however, provide otherwise and there are other exceptions to this rule.

The Secretary.—“The Secretary is an agent of the company for the particular duties he is deputed to perform, and the executive officer of the Directors to whom he is responsible. It is his duty to ensure that the Directors' instructions are passed on to, and carried out by, the staff. He must see that the company fulfils all legal requirements, and that the provisions of the Memorandum and Articles are complied with. In particular, it is his duty to conduct the general correspondence of the company; to prepare the agenda for directors' and general meetings, and to record accurate minutes of the proceedings at these meetings; to see that the statistical books are properly kept; to satisfy himself that transfers are in

order before bringing them before the directors to be passed; and (usually) to sign or countersign all cheques, share certificates, dividend warrants and similar documents, after having previously verified them before sealing and/or signature by the directors.”¹⁰

The Secretary must, of course, make himself as fully acquainted as possible with the details of *every* matter which comes before the Board for decision, as it may happen that any Director may question him on any point thereon. In addition to the legal knowledge which he must necessarily possess, to be really efficient he must (among other things) understand Accounts and Costing; be well acquainted with the ordinary operations of Finance and Credit; have a fair working knowledge of Taxation, Rating, and Insurance; and be competent as an Office Controller.*

COMPANY FORMATION

The inception and management of a Company, having been referred to, and the main differences between Public Companies and Private Companies noted, a general outline follows of the main regulations which affect them.

Memorandum of Association.—The first step in the formation of a Limited Company is the preparation of the Memorandum of Association. This document is descriptive of the proposed company and its objects (which, when set out in the Memorandum, become its powers), and is therefore of primary importance. It consists of six sections or clauses as set out below, each of which requires some explanation.

- (a) The Name Clause.
- (b) The Registered Office Clause.
- (c) The Objects Clause.
- (d) The Limitation of Liability Clause.
- (e) The Capital Clause.
- (f) The Association Clause.

(a) *The Name Clause.*—In this clause the Memorandum simply states the name of the company. The vital things about the name of a company are, first, it must contain the word “Limited” as the final word of its name; and secondly,

* See p. 215.

the Board of Trade has a discretion to forbid the registration of a name which in its opinion is undesirable. The object of the first requirement—that the name must contain the word “ Limited ”—is that persons dealing with the company may know that the liability of the members is limited, and that as creditors they cannot look to individual shareholders to meet the debts of the company, over and above the sum (if any) of the capital which remains unpaid on the shares registered in the name of each shareholder. In continuation of this principle, all letter-heads, cheques, bills, etc., and all premises of the company must bear the company’s name as shown in the Memorandum, *i.e.* including the word “ Limited.” There are a few special exceptions to this rule which need not be considered here. The effect in law, apart from these exceptional cases, of the omission of the word “ Limited ” from the title of a company in a document may be to throw upon the persons signing for the company the liability for debts incurred under the document and intended to be incurred on behalf of the company.

A company may change its name with the consent of the Board of Trade. And if a company should have been registered with a name which, in the opinion of the Board of Trade, resembles too closely the name of some other company, then the Board of Trade has power to direct the former company to change its name. Of course, the Board of Trade will normally prevent such a situation arising by exercising the discretion mentioned in the preceding paragraph.

(b) *The Registered Office Clause.*—This clause needs little explanation. In it is stated simply the country in which the registered office will be—*i.e.* England or Scotland. If the registered office is situate in England or in Wales the company will be registered at Bush House; if in Scotland, at Exchequer Chambers, Edinburgh. The registered office, which every company must have, is the office where the register of members is kept and where documents may be served on the company.

(c) *The Objects Clause.*—In this clause, as the name implies, the company sets out the objects for which it is being created; and since, subsequent to the statement of these objects, a company can do nothing which is not in pursuit of the specified objects or “ fairly incidental ” to those objects, it follows that

what is set out in the Objects Clause becomes the set powers of the company. These powers it may not exceed. Anything done outside them is *ultra vires* and is void, notwithstanding the approval of the whole of the shareholders or anything else which the company may do in endeavouring to make the act valid. It therefore is imperative that the objects detailed should cover all the activities in which the company is likely to engage; and consequently in this clause the powers are usually expressed in very wide terms. Even this precaution, however, may not be enough.

A company usually has a main object or a small group of main objects which are naturally put at the head of the list of objects. The danger is that a Court may, taking into consideration these main objects, together perhaps with the name of the company, construe the meaning of other detailed objects set out below the main objects as being merely incidental to the main objects. For example, suppose a company called, we will say, the Forest Brewers, Ltd., has in its object clause the following two items :

To carry on business as brewers, distillers, hop merchants, etc.
To acquire land and premises.

The Court might possibly consider in view of the name of the company, and the first object, that the acquisition of land and premises was only a subsidiary object, and therefore that power under that clause is limited to acquiring land and premises for the purposes of the brewing business. Any transaction in land and premises carried out purely in the way in which an estate agent, for example, would undertake such transactions, would in that case be held to be *ultra vires*, and therefore void. In order to avoid this sort of construction the Memorandum nowadays is often framed so as to recite all the possible things the company may wish to do, and to declare them to be independent main objects.

Other considerations affecting the objects clause are, first, that the object must not be illegal, and second, that if the main object of the company ceases to exist the company must be wound up. A case in point, illustrative of this latter principle, is that of a company formed to erect stands and let out seats for the Diamond Jubilee, with power also to carry on all kinds of promotion business, and to act as house agents. It was held in this case that after the Jubilee was over the

main object no longer could be carried out, and the company had to be wound up.

(d) *The Limitation of Liability Clause.*—This clause consists normally of the statement, "The liability of the members is limited," which, to repeat, means that no member can be called upon to pay more than the nominal amount of his shares, or so much as remains unpaid. Thus when his shares are fully paid he is freed from liability. In the case of a company limited by Guarantee, the Liability clause will mention the amount up to which members will individually meet the debts of the company in the event of its being wound up.

(e) *The Capital Clause.*—A company is required to define in this clause the amount of share capital with which it is to be registered, and the division thereof into shares of a fixed amount. This clause may give the right to divide the shares into classes with preferential or other rights attached to them, but it is not essential to include this provision. The disadvantage of declaring in the Memorandum the rights and privileges attaching to shares is that these provisions become by that declaration practically speaking unalterable. This clause in practice usually states that the Articles shall define the rights of the various classes of shares.

(f) *The Association Clause.*—This is not precisely a clause, but is rather a conclusion to the document, and a statement by the minimum number of persons that they wish to be formed into a company and agree to take a number of shares in the capital of the company. After a statement to this effect, the "clause" consists of a schedule of the names and addresses and descriptions of these subscribers, together with a statement of the number of shares each agrees to take.

It is laid down that there must be at least seven such subscribers for a Public Company (two for a Private Company), and they must subscribe for at least one share each.

The duties of the subscribers are :

To pay for the shares for which they have subscribed ;

To sign the Articles of Association ;

To appoint the first Directors (unless they are named in the Articles of Association) ;

If the articles do not name the first Directors, to act as Directors until such appointment has been made.

Changes in the Objects Clause.—By a special resolution* of its members a company may alter its objects but only insofar as may be required to enable it :

- To carry on its business more efficiently;
- To attain its main purpose by new means;
- To enlarge or change the area of its operations;
- To carry on some other business which may conveniently be combined with its own;
- To restrict or abandon any of its objects;
- To sell or dispose of the whole or any part of the undertaking;
- To amalgamate with any other company or body of persons.

But if a sufficient number of shareholders (as laid down in the Act) apply to the Court to cancel the alteration, it will only take effect to the extent that the Court confirms it. The Court will only allow the addition of entirely new powers in exceptional cases.

Articles of Association.—The next step after preparing the Memorandum is the preparation of the Articles of Association. The regulations brought into being by the Articles are divisible into certain main sections, and the titles sufficiently explain themselves, since they deal with :

Shares—description of the classes of shares, and the rights and privileges attaching to any particular class.

Certificates—Issue of share certificates. Transfer and transmission of shares.

* The resolution required as the first step in obtaining a change in the objects clause is a special resolution. It is convenient, therefore, to explain here the various kinds of resolution which can be passed by a meeting of shareholders.

They are three :—

(a) *Ordinary*.—An ordinary resolution is a resolution passed by a simple majority of those present and voting at a general meeting.

(b) *Extraordinary*.—An extraordinary resolution is a resolution passed by a three-quarters majority of the members present in person or (where permitted by the Articles) voting by proxy at a general meeting, notice of the intention to put an extraordinary resolution having been duly given to the members.

(c) *Special*.—A Special Resolution is a resolution passed by such a majority as is required for the passing of an Extraordinary Resolution and at a general meeting wheroof not less than twenty-one days' notice specifying the intention to propose the resolution as a Special Resolution has been given. But a resolution may be proposed and passed as a Special Resolution with less than twenty-one days' notice provided that a majority of the members entitled to attend and vote at the meeting so agree and provided, also, that that majority holds at least 95% in nominal value of the shares which carry a right to vote.

Calls—in respect of unpaid proportions of Shares.
Forfeiture and Lien—Penalties for non-payment of Calls.
Borrowing Powers.
General Meetings—Statutory and other Meetings.
Proceedings at General Meetings.
Voting.
Directors—Number, Remuneration, Qualification, Rotation, Disqualification, Powers
Dividends.
Accounts and audit.

It is not necessary actually for a company to draft specially its own Articles; for, if no Articles are registered, a standard set of Articles, which appears as a schedule to the Companies Act, and known as "Table A," will apply. But, quite commonly, a company will draft its own Articles, comprising, at least in principle, Articles of Table A, together with specially worded Articles to meet its own special requirements. In the case of a company limited by Guarantee, however, there must be registered with its Memorandum its Articles of Association, signed by the subscribers to the Memorandum, and prescribing regulations for the company. The Articles must state the number of members with which it proposes to be registered. A Private Company also must register Articles, since its regulations must include restrictions and prohibitions not included in Table A.

The Articles must be printed, divided into paragraphs numbered consecutively, bear the same stamp as if they were contained in a deed, and be signed in the presence of at least one witness.

These Articles, whether Table A, or composite Articles, or specially drafted Articles, together with any special resolutions passed by the company, are the regulations governing the internal management of the company. The Articles bind the company and its members to the same extent as if they had been signed and sealed by each member. As a result each member is bound to the company, and each member is bound to the other members, while neither the company nor the members are bound by the Articles to outsiders.

The right to alter the Articles, provided such alteration does not conflict with the Memorandum, may be exercised at any time by the company acting on a special resolution to that effect; but in such an event a printed copy of the resolution must be sent to the Registrar within fifteen days of the

passing of the resolution; and, if Articles have been registered, such alteration as embodied in the resolution must be included with or annexed to every copy of the Articles issued after the passing of the resolution. So also where Table A has been adopted.

Registration.—When the Memorandum and Articles have been prepared, the next step is the Registration of the company. For this purpose the persons wishing to form the new company must produce to the Registrar of Companies the following :

The Memorandum.

The Articles (if Table A is not to apply automatically).

Statement of the Nominal Capital.

In the case of a Public Company, a list of persons who have consented to become Directors, and

Consent to act, in writing, of the directors appointed by the articles, and

Undertaking by the Directors appointed by the articles to take up and pay for their qualification shares (if any) prescribed by the articles, unless they have signed the memorandum therefor.

A statutory declaration that the requirements of the Companies Act have been complied with.

The company, on registration, comes into existence, and the Registrar gives a certificate of incorporation. A Private Company may then commence business, but a Public Company cannot do so until certain conditions have been fulfilled, viz. :

(a) If a Prospectus has been issued, the following conditions must be satisfied :

Shares payable in cash amounting to not less than the minimum subscription must have been allotted.

Every Director must have paid to the company, on the shares he has taken or agreed to take for cash, a proportion equal to that which is payable on the shares offered for public subscription.

No money is liable to be repaid to applicants for shares or debentures by reason of any failure to obtain permission to deal in those shares or debentures on any stock exchange.

A statutory declaration that the above requirements

have been fulfilled must be signed by the Secretary or a Director, and handed to the Registrar.

(b) If no Prospectus has been issued :

A Statement in lieu of Prospectus must be filed.

Other requirements, somewhat similar to those mentioned under (a) above, must be complied with.

The Registrar will then issue a certificate stating that the company is entitled to commence business.

The Prospectus.—Persons are generally induced to become members of a new company by a Prospectus issued by the company. The principle governing these documents is that, while allowance may be made for reasonable optimism, no mis-statement or concealment of any material facts or circumstances is permissible. According to this principle, the 1948 Act requires every Prospectus to specify certain particulars. These particulars, which are voluminous, are set forth fully in the 4th Schedule to the Act. The following are particularly important :

Details as to the rights of the various classes of shares as regards capital, dividends, and votes; auditors' report on the profits and dividends paid on each class of share for each of the last five financial years (this applies only, of course, to new issues by existing companies); the minimum subscription; the number of deferred (founders' or management) shares and the interest of the holders in the property and profits of the company; vendors and their contracts; material contracts entered into by the company; directors' interests in the company; amounts paid to any promoter and the consideration therefor.

Offers for sale (e.g. by Issuing Houses) are put on the same footing as Prospectuses. This was first laid down in the 1929 Act to overcome evasions of the 1908 Act, whereby the whole of the shares in a new issue were issued through an intermediary, who in turn offered them to the public in documents not bound by the rules affecting Prospectuses. This possibility of evasion is now removed, and in this respect the 1948 Act re-enacts the provisions of the 1929 Act. Moreover, "Abridged Prospectuses" are prohibited, since it is made unlawful to issue any form of application for shares unless the form is accompanied by a Prospectus which complies with the Act.

The penalty for untrue statements or suppression of material facts in the Prospectus may take a number of forms. In the first place, the aggrieved person may repudiate the contract to take shares and may sue the company for return of whatever he has paid for the shares. His right to do this, however, will be lost if he does not pursue his remedy promptly on discovering the misrepresentation, or if he does anything which amounts to adoption of the transaction—if, for example, he attempts to sell the shares and pays calls, receives dividends, etc. The purpose of a Prospectus being to invite persons to become *original* shareholders its function is complete on allotment, and the subsequent purchasers of shares have no right of action in respect of any concealment or misrepresentation in the Prospectus.

A person aggrieved may also be able to claim compensation under Section 43 of the Act. This Section makes certain persons *prima facie* liable for untrue statements in a Prospectus at the suit of any person who has, because of such statements, suffered damage. It is not necessary in an action under this Section to prove that the statement was made fraudulently.

The persons made responsible are :

Every person who is a Director at the time of issue of the Prospectus.

Every person who has authorised himself to be named and is named in the Prospectus as a Director, or as having agreed to become a director.

Every person being a promoter (see p. 41) of the company (and therefore a party to the Prospectus).

Every person who authorised the issue of the Prospectus.

The person accused has to show that he had reasonable grounds for believing the statement was true, such as that it was the opinion of a competent expert, etc. In other words, the onus of proof is shifted from the plaintiff to the defendant. If the person sued is a Director he can avoid liability by showing that he withdrew his consent to be a Director before the Prospectus was issued, or that it was issued without his authority or consent, or that in some way on becoming aware of the untruth he withdrew his consent to the Prospectus, and gave reasonable public notice of his withdrawal.

Where a prospectus includes a Statement made by an expert,

such as an engineer, valuer, accountant or other professional man, he must consent to the issue of the prospectus with the statement in the context in which it appears. The fact that the expert has given his consent must appear in the prospectus. He will be liable to pay compensation for any untrue statements made by him as an expert but certain defences are open to him similar to those which are available to a Director.

Statement in Lieu of Prospectus.—A company (not being a private company) having a share capital, which does not issue a Prospectus cannot allot any of its shares or issue debentures unless at least three days before the first allotment there has been delivered to the Registrar of Companies for registration a "Statement in lieu of Prospectus" signed by the persons named in it as Directors. The disclosures demanded in a Statement in lieu of Prospectus (as laid down in the 5th Schedule of the Act) are practically as extensive as in the case of a Prospectus issued in the ordinary way. A person aggrieved by concealments and omissions in the Statement has the same rights of rescission as if he had been similarly misled by a Prospectus, but he has to prove that he did in fact rely upon the Statement.

Minimum Subscription.—It has for a long time been the practice that allotment of shares could only proceed when the minimum subscription laid down in the Articles and the Prospectus had been paid to and received by the Company. This protection against proceeding to allotment when the appeal to the public has been a failure was often itself made farcical by the fixing of an absurd minimum, such as "Seven Shares." It is provided in the 1929 Act that the minimum subscription is to be the amount which in the opinion of the Directors is required to provide the whole or the part otherwise unprovided for of any sums necessary to cover—

The purchase price of any property which is to be paid for out of the proceeds of the issue.

Preliminary expenses and underwriting commission.

Any loans contracted for the above purposes.

Working capital.

The Prospectus must state the amount of the minimum subscription and, where the amounts or any part of them specified above are to be provided for otherwise than out of the proceeds of the issue, the sources whence they are to be provided.

Underwriting.*—In order to make sure that an issue of shares to the public shall not prove abortive, it is common for a company to enter into contracts with underwriters, who agree to take a specified number of shares if the issue is not fully subscribed. In payment for the risk they take in this respect the underwriters receive commissions which are regulated by the Act of 1948, where it is laid down that payment must be authorised by the Articles, and must not exceed 10 per cent. of the price at which the shares are issued, or the rate authorised by the Articles, whichever is less. The terms of commission must be disclosed in the Prospectus or Statement in Lieu.

Allotment of Shares.—The requirements to be met before a company can make a first allotment of shares are as follows :

The minimum subscription must have been paid to and received by the company, and the amount payable on application on each share must be not less than 5 per cent. of the nominal value.

These requirements must be met within forty days of the issue of the Prospectus, or there can be no allotment, and money received with applications must be returned. Directors become personally liable for this after forty-eight days.

The Contract of Allotment consists of the offer conveyed in the application and the acceptance contained in the allotment. There is no binding contract until allotment has been made by resolution of the Board and the notice has been posted to the allottee, or has reached him in some other way. No allotment can be made until the third day after the day on which the prospectus is first issued generally, whether in the form of a newspaper advertisement or otherwise.

Issue of Shares at a Discount.—Section 57 of the 1948 Act authorises the issue of shares at a discount. Prior to the 1929 Act such an issue was *ultra vires*, and the persons to whom the shares were allotted were under obligation to pay the shares up in full. The conditions under which issue at a discount will be sanctioned by the Court, are that :

The shares are of a class already issued.

The issue is authorised by the company in general meeting by a resolution, sanctioned by the Court, specifying the maximum rate of discount.

* See p. 108.

The company has carried on business for at least one year.

The shares are issued within a month of the date on which the sanction is obtained—unless the Court extends such time.

Register of Members.—The names of the persons who acquire membership by subscription to the Memorandum of Association will in the ordinary course be entered in the Register of Members. Allotees do not become members until their names have been entered in the Register.

COMPANY STATUTORY REQUIREMENTS

Annual Return.—Every year a company having a share capital is bound to send to the Registrar certain details in regard to its operations during the past year. The object of this is that information relating to every company should be open to inspection by the public. The form of Return and the information to be included therein are set out in the 6th Schedule of the Act. The Annual Return must be completed within forty-two days after the Annual General Meeting and a copy must then be sent to the Registrar of Companies together with a copy of the Balance Sheet and Auditor's Report.

The following comprise the more important headings under which information has to be given in the Return, viz. :

The amount of share capital and the number of shares—distinguishing between those issued for cash and those issued as fully or partly paid otherwise than for cash.

The number of shares actually taken since the inauguration of the company.

The amount called up on each share.

The amount of calls received and the amount unpaid— together with the number of shares forfeited.

Amount paid away as commission in respect of shares and debentures.

Particulars of Directors and Secretary.

The amount owing by the company in respect of mortgages and charges.

Except in the case of a private company, a copy of the last audited Balance Sheet and of the Auditors' Report thereon.

A list of present members and of those who have ceased to be members since the last Return and particulars of shares transferred since that date.

A company not having a share capital must also once in every calendar year file a return stating the registered office of the company, particulars as to the directors and the secretary of the company, and of its indebtedness in respect of mortgages and charges.

Accounts.—A company is by the Act bound to keep proper books of account which the Act defines as all such books as are necessary to give a true and fair view of the Company's affairs and to explain its transactions. In particular, the Accounts must show :

All sums received and expended and details of how the receipt and expenditure took place.

All sales and purchases of goods.

The company's assets and liabilities.

The Directors are bound to prepare once a year a Profit and Loss Account and a Balance Sheet, and to lay these statements before the company in General Meeting. To the Balance Sheet the Directors have to attach their report in which they usually comment upon the state of the company's affairs in progress during the past year, etc. ; make recommendations to the meeting as to what amounts should be carried to reserve * and what paid out in dividends ; name the retiring Directors, and those who offer themselves for election or re-election ; and refer to the appointment or re-appointment of Auditors.

The information required to be given in the Balance Sheet is laid down in the Eighth Schedule to the Act. Every Balance Sheet must contain a summary of authorised capital, *i.e.* the capital shown in the Memorandum of Association, and also the whole of the company's Assets and Liabilities. Among the liabilities will, of course, appear the actual or issued capital, as distinct from the authorised capital, and also any debentures issued by the company.

The following items must be shown, insofar as they have

* As to reserves, it is not uncommon for the Articles of Association to give to the Directors some such power as the following: "The Directors may, before recommending any dividend, set aside out of the profits of the Company such sum or sums as they think proper as a reserve fund or reserve funds." Probably such Articles would also state that the Directors shall have discretion as to how to apply such fund or funds; and, alternatively, that, by sanction of the Company in General Meeting, such fund or funds shall be available for equalisation of dividend, distribution by way of special dividend or bonus or for any other lawful purpose.

not been written off by successive transfers to the Profit and Loss Account :

- (a) Preliminary expenses,
- (b) Expenses incurred, discounts allowed and commissions paid in connection with any subsequent issue of shares or debentures.

The Company's reserves, liabilities and fixed and current assets must be classified under separate headings and any increase or diminution during the preceding financial year of any of the company's reserves must be shown. The Balance Sheet must indicate the value of the goodwill and of patents and trade-marks owned by the company, insofar as the value of these items are included as assets and can be separately ascertained.

The accounts to be laid before every company in General Meeting must show clearly the loans made to any Director, Manager or Secretary during the period covered by the accounts—even if such loans have been repaid within the period—and also the loans made before the period and outstanding at the end of it. The Company's accounts must give particulars of Directors' emoluments, including sums paid in respect of expenses, pensions paid to past Directors and any sums paid to present or past Directors as compensation for loss of office.

Where a company has subsidiaries (*i.e.* is a "holding company") group accounts must be prepared so as to show the financial position of the entire group of companies. They will normally take the form of a consolidated Balance Sheet and a consolidated Profit and Loss Account but the Directors of the holding company are free to adopt any other method that will give a true and fair view of the affairs of the group in one easily understandable form. Also, the holding company and every subsidiary must each prepare its own individual Balance Sheet and Profit and Loss account. In addition to the information normally required in a Balance Sheet the holding company must give details of shares which it holds in its subsidiaries and of amounts owing from the subsidiaries to the company and from the company to the subsidiaries. The accounts of a subsidiary company must show the amounts owed by it to its holding company and fellow subsidiaries and vice versa. A company is a subsidiary of another company if that other :

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- (a) Is a member of it and controls the composition of its board of directors; or
- (b) Holds more than half in nominal value of its equity share capital (*i.e.* the issued shares which carry no restrictions as to participation in distributions of dividends or capital).

Auditors.—A company is bound to have Auditors. They must be appointed at each Annual General Meeting, but their annual re-appointment takes place automatically except (a) where they have become disqualified from re-appointment or (b) have given notice of their unwillingness to continue in office or (c) where the company passes a resolution appointing different auditors or providing expressly that the retiring Auditors shall not be re-appointed. If the company does not make a new appointment, when necessary, the Board of Trade has power to fill the vacancy. A person is not qualified for appointment as an Auditor of a company under the Companies Act unless he is either a member of a recognized professional body of accountants or, alternatively, has been authorized by the Board of Trade to be so appointed. In addition, the following persons are disqualified from appointment as Auditors :

A Director, Officer or servant of the Company.

A Partner of, or a person employed by, an Officer or servant of the Company (this exception does not apply to an Exempt Private Company *).

A body corporate.

The Auditors have the right of access at all times to the financial books and vouchers of the company, and the right to demand any explanations and further information which they may find necessary in pursuit of their duty as Auditors, which is to examine the books and accounts and compare them with the statements in the Balance Sheet. They then have to make a report to the members, which usually but not invariably takes the form of a signed statement at the foot of the Balance Sheet (see p. 114). The particulars to be stated in the Balance Sheet are set out in Sect. 147 *et seqq.*, and other sections of the Act.

The Auditors' report has to state the matters set out in the Ninth Schedule to the Act and, in particular, whether they have obtained the information and explanations necessary for the

* See p. 47.

purposes of their audit, and whether in their opinion the Balance Sheet, Profit and Loss account and group accounts (if any) are drawn up in accordance with the Act and give a true and fair view of the state of the Company's affairs as at the end of the financial year and of its profit or loss during that year. The weight of responsibility upon an Auditor is, therefore, heavy—especially since, if the Balance Sheet is subsequently proved to have shown a false position, the onus rests upon the Auditor to prove that there has been no breach of duty on his part. Because of this onerous position the responsibility of an Auditor is fairly exactly defined. He is bound to act honestly and to take reasonable care that what he certifies is true ; but, on the other hand, he is not bound to be suspicious where there are no circumstances to excite suspicion. Complaints against Auditors will thus usually be difficult to sustain, and will depend on the facts of the particular case. Many decided cases throw light on the various aspects of the problem. The rights and duties of Auditors are dealt with in Sect. 162 of the Act.

Meetings of a Company.—A company, other than a Private Company, or an unlimited company, or a company limited by guarantee not having a share capital, is bound, under the Act, to call a Statutory Meeting of its members, and every company is bound to call an Annual General Meeting. The Statutory Meeting has to be called in the second or third month after the company has become entitled to commence business, to receive the Statutory Report, which, after adoption, must be delivered to the Registrar of Companies. The items dealt with in the Statutory Report are fixed and are as follow : (It will be noted that the items are very similar to those of the Annual Return made by the company to the Registrar.)

- (a) Total number of shares allotted, distinguishing those allotted otherwise than for cash.
- (b) Amount of cash received for such shares.
- (c) Abstract of receipts on capital account—from shares, debentures and other sources—and of payments on capital account.
- (d) Account, or estimate, of preliminary expenses.
- (e) Names, addresses and description of Directors, Auditors (if yet appointed), Manager (if any) and Secretary.
- (f) Particulars of any contracts proposed to be modified, and of the proposed modification. This, of course, is directed

to prevent the unrevealed modification of contracts set out in the Prospectus, which may have been factors in the attraction of shareholders' money.

If Auditors have been appointed they must certify as correct the first three items in the report. It is laid down that a copy of the Statutory Report must be forwarded to members at least fourteen days before the Statutory Meeting.

An Annual General Meeting has to be held once in every calendar year, and not more than fifteen months after the preceding one. If the Annual General Meeting is not called, any member may ask the Board of Trade to order one. The business of the Annual General Meeting is not laid down by law, but it consists of the consideration, and acceptance or otherwise, of the Directors' Report and Accounts, the authorisation of dividends, etc., the election of Directors, the appointment of Auditors, and any other business. Extraordinary meetings may be called on the requisition of the holders of not less than 10 per cent. of that part of the paid-up capital which carries the right to vote.

Voting.—With regard to voting powers, what may be called the standard arrangement is that one share carries one vote; and this arrangement is the one laid down in Table A (which, as explained previously, is the model set of Articles of Association scheduled to the Companies Act). The Articles of a particular company may not, however, follow Table A in this respect; and some other arrangement may be provided for in a special clause of its Articles.

Another aspect of voting is the question of proxies. The procedure here is laid down in Section 136 of the Act and in the Articles. Usually a member unable to attend a meeting may appoint a proxy. The appointment has to be in writing and the person appointed need not necessarily be a member of the company. It is common for a corporation which holds shares in a company to vote through one of its own officers, even though he is not a member of the company.

SHARE HOLDINGS AND DIVIDENDS

Classes of Shares.*—In addition to the Ordinary Shares in a company it is common to find Preference Shares and Deferred Ordinary Shares; but there are other classes of shares.

* See p. 118.

Ordinary Shares.—The majority of the shares issued by limited companies are of this class. Ordinary shares carry no special rights as to dividend or capital repayment. Generally, they are entitled to the surplus profits remaining after any prior fixed dividends, such as those attaching to Preference Shares, have been paid. In the liquidation of a company the ordinary shareholders are entitled to the equity remaining after all prior claims have been met, subject to any right attaching to Deferred Ordinary Shares, when such exist.

Deferred Ordinary Shares.—These shares are usually held by the originators of the company, and a dividend is paid on them only if the dividend on the Ordinary Shares reaches a certain level. Other names for these are Management or Founders' Shares.

Preference Shares.—The name Preference Shares is a little ambiguous, as in practice the privilege given to Preference shareholders may mean either or both of two things. Sometimes the shareholder has preference as to dividends over the ordinary members. What happens then is that a fixed dividend on Preference Shares is laid down in the Articles and in the Prospectus relating to the Preference issue, and until this fixed dividend is paid no dividend is payable on the Ordinary Shares. Preference Shares may be cumulative, and in that case a deficiency in dividend in one year is made up when the profits in subsequent years permit. Alternatively the Preference may relate to capital; in other words, in the event of a winding-up, the Preference shareholders have a right to be paid out of the realised assets before the ordinary shareholders. Current practice seems to favour Preference Shares having precedence both as to dividends and capital repayment.

Quite often more than one issue of Preference Shares is made, one issue ranking above the other in Preference, but below it in the amount of the fixed dividend. A company may issue redeemable Preference Shares; but, if it does, the redemption may only be made out of profits or out of the proceeds of a fresh issue made for the purpose. Into whatever class the shares fall, the rights and privileges attaching are not fixed and invariable for all companies, but are laid down for each company in its Articles.

Conversion of Shares into Stock.—Stock differs from shares in that it may, for purposes of transference, be split up into

any fractional amount, whereas a share cannot be subdivided. Usually, transfers of stock are restricted to an even number of pounds. The conversion of fully-paid shares into stock may, provided the Articles permit, be made at any time by the company in General Meeting.

Calls.—A shareholder is liable to pay the full amount which is unpaid on his shares—at some time or other. The making of calls in respect of the unpaid balance of shares will be done by the Directors according to the terms of the Articles of Association. A shareholder failing to meet a call may be sued, or else his shares may be forfeited by resolution of the directors, acting in strictest accord with the articles relating to forfeiture. Articles usually give power to re-issue forfeited shares.

Dividends.—Dividends are defined as the profits of trading divided among the members in proportion to their shares. Unless the Articles specially provide for it, the question whether a share is fully paid up does not affect the proportion of the trading profits due to its holder. The actual method of payment is determined by the Articles. Usually they are paid by the Directors with the sanction of a General Meeting, and the actual distribution is by cheque or warrant sent to the registered address of each shareholder. An interim dividend is one declared by the Directors between two General Meetings and, therefore, without such sanction.

The important rule about dividends is that they must not be paid out of capital, and that they should only be paid out of profits. These two things are not quite the same, as it would be possible, for example, to declare a dividend out of trading income disregarding the fact that certain kinds of losses were being made. While the rules are fairly clear, it is often by no means easy to decide whether dividends have really been paid out of capital or not. The most obvious thing which creates difficulty is the depreciation or shrinkage in value of the capital assets. If a profit has been shown of, say, £10,000 without charging to revenue a shrinkage of, say, £1,000 in the capital assets, and if a dividend is declared to distribute the whole of such £10,000, then in effect £1,000 of dividends are paid out of capital; because, while the liability to shareholders remains the same, the assets to meet that liability have been reduced by £1,000, and no reserve out of trading profits has been made to replenish the assets.

Circulating capital (*i.e.* property acquired or produced with

a view to sale or resale at a profit) must be kept up; but it is not so clear in law that the same necessity applies to fixed capital (*i.e.* property acquired and intended for retention and employment with a view to profit); and although as financial practice it is bad, companies are legally entitled to pay away dividends without having in the Profit and Loss Account provided fully, or even at all, for depreciation of fixed capital.

If the contrary thing has happened to fixed capital, *i.e.* if it has gained in value, then generally speaking, although it would be equivalent to a payment of dividend out of capital, it would be legal to pay away the amount of the gain in dividends. A sounder course would be to transfer the increase to reserve.

Acquisition of Membership by Transfer or Transmission.*— The members of a company have an absolute right to transfer their shares—subject to restrictions which there may be in the Articles of Association. The Articles, in practice, often do (and in the case of a Private Company they must) contain such restrictions; and in Table A, for example, there are regulations which prescribe a form of transfer, and provide that the company may refuse to register any transfer of shares on which it has a lien (which is a right to retain property until a debt due to the person retaining has been settled) or any transfer to a person of whom they do not approve.

The effect of these regulations, however, is, in general, that a member has a perfect right to transfer *fully paid* shares to whomsoever he pleases, and, where the Directors have the right to prevent such transfers they cannot exercise it without good reason; and the Court may be called upon to compel transfer if they act from improper motives.

DEBENTURES

A Debenture † is defined as a document given by a company as evidence of a charge created upon its property—usually in respect of a loan. It provides for the payment of the money lent with interest; and in effect is a promise to pay at a certain future date the capital sum borrowed, and in the meantime to pay interest at fixed intervals and at a fixed rate. A Debenture is usually one of a series although not necessarily so. Debentures may, however, take the form of Debenture Stock, which is simply the consolidation of the whole sum desired

* See p. 109.

† See p. 119.

to be borrowed into a single mass ; and Debenture stock can be transferred, like ordinary stock, in any amount, though, usually, transfers are restricted, to multiples of one pound. Debentures may either be registered, or payable to bearer.

Since Debentures and Debenture Stock confer no right to vote or participate in profits, but merely represent loans made at a fixed rate of interest, they have to be secured by some sort of charge on the company's property. This charge may be made upon a specified part of the company's property. Such a charge is usually secured by a trust deed, and the Debentures so secured are known as Mortgage Debentures. The most common procedure, however, is to create what is known as a floating charge upon all the company's property, present and future, including uncalled capital, if the directors are so empowered. When such a charge is made, it does not hinder the company in making use of its assets in the course of its business until the Debentures mature, and have to be met—and then only if the money is not available, and the debenture-holders take action to enforce their security. Particulars of all charges must be specified in the Company's Balance Sheet, and be filed with the Registrar of Companies, and also be recorded by the company in a register kept at its registered office.

ALTERATIONS OF CAPITAL

Circumstances may occur during the life of a company when it is desired to increase or decrease the share capital. In either event the law, careful to protect the interests of both the shareholders and the public, lays down a closely defined procedure, which must be strictly adhered to.

Increase of Capital.—A company may desire to increase its capital in order to acquire or absorb other companies or simply to expand its own range of operations. The procedure is governed by Section 61 of the Act, which requires that any increase shall be made only with the sanction of the company in General Meeting. No increase may be made unless the Articles expressly permit, and Article 44 of Table A shows the standard formula by which the Articles allow the capital to be increased.

Decrease of Capital.—When it is desired to decrease the capital of (or to "reconstruct") a company, many more difficulties are put in the way than in the case of an increase.

The reason is that the rights of the shareholders and of the company's creditors are bound to be adversely affected; and the law therefore demands that the reasons for the step should be clearly stated to and approved by the Court.

There are various reasons why a company should seek to reconstruct. It may be that serious losses have been made over a long period, so that a heavy balance stands to the debit of the Profit and Loss Account—or, on the other hand, the current value of the assets may have undergone serious shrinkage. In the former case obviously there is no likelihood of a dividend becoming payable on the existing capital, even after a period of better results; and in the latter the likelihood is almost equally small, owing to the discrepancy between the capital upon which dividends have to be paid and the actual value of the assets utilised to produce those dividends. In either event, a condition of over-capitalisation has occurred.

The remedy is to reduce in some way the amount of capital upon which dividends have to be paid; and there are several ways of doing this, each applicable in certain circumstances. These methods are described in Section 66 (1) of the Act; and attention is drawn to the cautious wording used in setting forth the powers of a company in this respect.

“Subject to confirmation by the Court, a company limited by shares or a company limited by guarantee and having a share capital may, if so authorised by its Articles, by special resolution reduce its share capital in any way, and in particular, without prejudice to the generality of the foregoing power, may—

- (a) extinguish or reduce the liability on any of its shares in respect of share capital not paid up; or,
- (b) either with or without extinguishing or reducing liability on any of its shares, cancel any paid-up share capital which is lost or unrepresented by available assets; or,
- (c) either with or without extinguishing or reducing liability on any of its shares, pay off any paid-up share capital which is in excess of the wants of the company;

and may, if and so far as is necessary, alter its Memorandum by reducing the amount of its share capital and of its shares accordingly.”

CHAPTER III

OTHER FORMS OF ORGANISATION

In this chapter the structure of industry is considered more from the angle of groups of units acting collectively than from that of the single unit, and it is shown that the merging of units into such groups or combines is increasingly typical of the modern order. If, however, the resultant administration is not equal to its task, the inevitable disintegration of the combine does grave damage. In administering a combine, the composing of conflicting interests may call for a strength and integrity of character on the part of those in control that are rarer than organising ability. Although not presented from that angle, this chapter may be approached as, in part, a study of the human element that enters into the organisation of the more obvious economic forces which play upon the industrial unit.

COMBINATIONS

PERHAPS the most noteworthy developments of modern industry are the increased scale of individual units and the growth of combination. The earlier period of free competition is giving place to one in which various forms of agreement to restrict competition have arisen in most of the industrial countries of the world. In some cases these agreements are international in scope. On the other hand, to a certain extent the increased size of industrial units has tended to intensify competition by making it imperative for these big concerns with specialised plant to keep going as long as possible in times of depression, even if this means working temporarily at a loss. Where smaller concerns would have to close down, the large undertaking may continue to "live on its own reserves" for some time, a particularly harmful type of competition thus resulting. Recognition of the damaging effect this may have on a whole industry has provided one of the chief inducements for combination directed to limiting competition.

The Balfour Report on *Factors in Industrial and Com-*

mercial Efficiency,²⁰ published in 1927, gives the following classification of organisations having as their main object the limitation of competition.

(1) *Informal understandings or "gentlemen's agreements,"* between competitors as to prices to be charged or areas to be served.

(2) *Associations for regulating prices*—more formal agreement.

(3) *Associations for regulating output.*

(4) *Pooling associations.* In the commonest form each member pays a small fixed sum per unit of output into a pool which, at regular intervals, is divided up equally among the contributors after the formation of a reserve fund.

Another type consists of an arrangement whereby each producer is allotted a percentage of the aggregate output of all the producers in the association, the percentage being fixed on the basis of ascertained experience in the recent past. Payments into the pool are made on an agreed basis, by producers exceeding their percentage quota, and those falling short receive compensation.

(5) *Associations for allocating contracts.*

(6) *The selling agency*, for a number of firms producing the same article, to prevent undercutting of prices.

(7) *The participating cartel with selling syndicate.* This is a German type of organisation wherein competing producers agree to establish for a definite period a joint selling agency for the exclusive sale of their products, each producer being allotted a "participation" in the total output. Those who exceed their participation pay a fine; those who fall short of it receive an indemnity. The selling agency or syndicate is registered as a company in which the individual producers are shareholders with votes in proportion to their output. The members fix a base price for their products covering cost of production, and sell to the syndicate at an accounting price which is usually somewhat higher. The syndicate sells to the consumer at the highest price it can get, adjusting its price to circumstances in different markets, though it does not as a rule sell below the accounting price. The German cartels have frequently made it a part of their policy to subsidise the export trade, particularly in years of depression, out of increased prices charged in the home market.

The method adopted of apportioning the trade amongst the associated producers will vary according to circumstances, and may take the form of a geographical apportionment of markets, a percentage apportionment of the total market, a fixing of a production quota for each producer, or other suitable arrangement.

(8) *Financial community of interests*, when two or more companies agree for a period of years to pool the whole of their profits and to divide them up between the companies in pre-arranged proportions—the companies retaining a separate existence under their own management, although they may work closely together by means of joint-committees.

(9) *The "voting" trust*. A number of competing companies agree to assign the whole of their stock to a group of trustees, receiving in exchange trust certificates representing the valuation of their properties. The trustees thus exercise complete control over all the businesses. In the United States, where this form of organisation originated, it was declared to be illegal as being in restraint of trade.

(10) *Exchange of shares*.

(11) *Holding companies*. Individual companies sell their shares, or a majority of them, to a company which then controls the general policy of the group, while leaving a greater or less degree of autonomy to each company.

(12) *Consolidations or mergers*. This type represents complete combination, the combining companies losing their separate existence. Such combinations may be of either of two types :

- (a) Horizontal Combines.
- (b) Vertical Combines.

(a) *Horizontal Combines*. These are combines of undertakings carrying out the same functions in a particular trade. A combination of wool-spinning companies into one big wool-spinning company would be a horizontal combination.

The chief object of this form of combine is to secure the advantages of large-scale operation—the elimination of wasteful competition, increase of efficiency by such methods as systematic works specialisation, greater facilities for research, and in fact the usual advantages accruing to large-scale production and distribution. Other objects may be those following

upon the achievement, or practical achievement, of monopoly—*i.e.* price-fixing, restriction of output.

Again, the object may be to improve the bargaining power of the new amalgamated concern in the purchase of the raw material by enabling it, as a larger unit, to buy at better prices, or, at the finished product end, by enabling it to negotiate with other large units with a view to making marketing agreements.

(b) *Vertical Combines.* These are combinations of companies engaged in various stages of the production of the article of final consumption. A combine of wool-growers, spinners and weavers would come into this category, the object of which is to avoid being dependent upon vicissitudes of the market as regards raw materials or semi-finished goods. A further object is to avoid being at the mercy of a horizontal combine affecting some stage or process of manufacture. A vertical wool combine might, for example, be formed to avoid the necessity of purchasing yarn from a combine of spinning companies.

In a period of violent fluctuations of supply and prices these things may be of great importance; but in normal times such advantages may be more than offset by the obligation, resting upon the finishing sections of the organisation, to obtain supplies from the other sections, without being able to reap the full benefit of market conditions by buying outside, should more advantageous terms be offered. For these reasons the vertical form of combination has been steadily passing out of favour.

*Factors in Industrial and Commercial Efficiency.*²⁰

RATIONALISATION

Discussion of combinations leads naturally to the question of Rationalisation, because that word, of Continental origin and of very wide significance, has come in this country to connote simply the large-scale unit of capital. Rationalisation in the broadest sense should be synonymous with efficient industrial administration.

The features of rationalisation of particular interest in the present connection may be summed up under three heads:

(a) The aggregation of capital into larger units, and the establishment of inclusive regulating bodies for whole industries

—with the purpose of regulating both production and prices, of concentrating output in the best equipped and most suitable factories, and of closing down redundant and inefficient works.

(b) The adoption of more efficient methods both of buying materials and requisites in bulk, and of marketing products through a central selling agency or by some similar method.

(c) The creating of international agreements for the definition of markets and spheres of influence with similar organisations in other countries.

Perhaps Imperial Chemical Industries, Ltd., with an authorised capital of about £74½ million comes nearest in Great Britain in attaining the above objectives.

The advantages of combines should lie in reduced working expenses, in reduced competition, in increased openings for specialisation, in the elimination of surplus and inefficient plant, and in increased opportunities for scientific research. The disadvantages have more force usually from the consumer's point of view than from the producer's. The consumer is in theory enabled by the reduced unit costs of production to buy the same goods at a lower price, or better goods at the same price. But, in fact, the combine may not concern itself with increasing its efficiency and reducing its costs, and may continue to charge the same, or even higher, prices because of its monopoly power. Whether it will or will not do either of these things will probably depend firstly on the closeness of the approach to monopoly achieved, and secondly on the elasticity of the demand for the product in question.

The mere fact of combination does not necessarily mean that all the advantages expected to accrue are in fact automatically achieved. That some of the largest of the post-1914/18-war combines proved unwieldy, and were found to comprise too many varied enterprises for true economy, is evident from several cases of really tremendous writing down of capital and restriction of the sphere of operation of some of the huge English engineering combines. These failures may be considered to be due, in large part, to lack of efficient administration of such large-scale combinations, and to want of understanding on the part of the promoters of the vital need for such administration.

TRADE ASSOCIATIONS

Reference has been made to trade associations as a form of combination, and some further discussion is called for in this connection. The starting-point is that of the legal position in this country of trade combinations, as this has necessarily controlled the development of trade associations. In the U.S.A., for instance, the Sherman Anti-Trust Laws have prevented the formation of "price rings" as they are known here, but have correspondingly stimulated the adoption of uniform costing systems within each trade, and the interchange of cost information, to a degree not likely to be copied in this country as matters stand. This information has tended towards checking price-cutting within an industry below an economic level. As a matter of interest it may be noted that, following closely on U.S.A. practice, the English Federation of Master Printers have been led to adopt uniform costing methods for their own protection, if only because their industry did not lend itself to any standard of selling prices—each printing job being different practically from every other printing job. Other industries also use uniform costing methods.

In England there is no legislation against combines in general, except that an agreement between persons or companies, or any other parties, may not be legally enforceable if it is "in restraint of trade." An agreement between two legally separate parties to restrict output, or to refrain from competition one with another in a particular area, might be an agreement in restraint of trade, and if it were such could not be enforced.* Consequently the application of the cartel is very seriously hampered in England—because the kind of agreements which are made by the members of a cartel are precisely the kind of agreements which English law may regard as being in restraint of trade, and therefore unenforceable.

At this point it should be made quite clear that there is all the difference in the world between a thing which is illegal and a thing which is legally unenforceable; and there is nothing in English law which makes illegal the formation of such associations as those referred to.

What happens is that an association is formed, probably at a time of difficulty, and an agreement is made perhaps to

* See p. 8.

restrict output and to share it out among the associated concerns. As soon as prices begin to improve as a result of this action, or for other reasons, individual members of the association will be tempted to break faith with the association, and to produce more than their agreed share of the total output. As prices continue to rise this temptation will become stronger, until eventually some members do, in fact, desert, and the association, because it may not be able to take the matter to the Courts, is very often practically powerless to do anything against the offenders, and may even be disbanded. That is not to say, however, that these associations are not important. For the period of their existence they often exert a decisive influence; and also, in certain conditions, they may attain that long life which is so often denied them by force of circumstances.

It is not an unreasonable generalisation to say first, that, in practice, the kind of compact which is generally known as a "gentleman's agreement" can only effectively be made between large-scale concerns, since personal contact is more easily established between those in control of the necessarily fewer large-scale concerns, which, in any case, have the advantages of larger resources and ramifications; secondly, that an agreement between small concerns will therefore need to be a written agreement; and thirdly, that the smaller the individual concerns which are party to an agreement, and the larger the number of such small units, the greater is the risk of defection and ultimately of disruption of the association, and consequently the shorter the life of the association is likely to be. It may be noted in passing that in a trade association no financial interlocking is involved, nor are policies necessarily unified by membership of such bodies, which are simply voluntary associations of members of one trade or of one group of allied trades formed with the idea of reaping a common benefit.

It will be useful to examine some of the ways in which these associations work. Where the object of the agreement is merely to fix prices its operation is comparatively simple. The association, through some kind of controlling council or committee, draws up a schedule of prices to which it is binding upon the members to adhere. The members are expected to prove on challenge that the price schedule has been adhered to; and in practice, of course, if it is ignored it does not take long for knowledge of the breach of faith to get round the trade.

A particular aspect of price maintenance arises in connection with proprietary articles in respect of the retail price to be charged to the public. The association which has led the way in this matter is the Proprietary Articles Trade Association, membership of which is principally composed of manufacturers and distributors controlling pharmaceutical products. The method of control adopted is by a general agreement amongst the members to withhold supplies from a retailer who is found to be selling below the fixed price any article scheduled in a protected list.

The second major object for which associations are set up is, in one way or another, to control output. The normal way in which this object is achieved is by the allocation to each member of a fixed percentage or quota of the total production of the members of the association. That is not quite so simple as it appears, because it involves first of all a great deal of delicate negotiation as to what the percentages shall be—each constituent member wishing, of course, to produce enough to utilise his own equipment to the full; and it may sometimes involve the second factor of deciding what in fact shall be the grand total figure of production to which the quotas shall add up. In other words, sometimes the quotas are simply fixed percentages of whatever the total may subsequently turn out to be, and sometimes they are fixed amounts adding up to a predetermined total.

The method by which the system works is usually as follows. When an association is formed, each member-firm gives the Secretary—who is usually an independent professional accountant—full access to its books. The Secretary verifies the percentage of the aggregate trade done by each member over an agreed period, and notifies the member accordingly. Either this distribution of the total trade, or some modification of it, will then become the quota accordingly. Thereafter at regular intervals—usually monthly—the Secretary ascertains from each firm its output during the last period; and, having obtained figures for all firms, informs each by how much it has exceeded or fallen short of the quota. At the end of a period, usually a year, these pluses and minuses are adjusted by the exaction of penalties from those who have over the period exceeded their quota, and the payment of compensation to those who have fallen short of it.

The system described is in fairly common use in a number of industries, including the nitrate, tinplate, galvanised sheet, white lead and red lead trades. It is severely criticised very often on the ground that it tends to "stereotype the ground plan of industry" (a phrase used in the 1919 Report of the Committee on Trusts) by retarding individual expansion and ensuring a livelihood to inefficient firms. The same Committee, in this connection, quoted the case of a firm which found it could not make profits equal to the compensation receivable for falling short of the quota allotted to it, so it just ceased to manufacture, and drew a handsome income in the form of compensation from the pool.

That is, of course, an extreme case and one not likely often to be repeated, because the normal life of these associations is not long enough to make it worth while for any firm to surrender its clientele and goodwill for the advantage of an unearned income for a short time. The example does, however, lend force to the criticism quoted; although there may be, and often are, arguments on the other side which justify the existence of this type of association in spite of the general criticism.

Another method of controlling output is used in trades where tendering for contracts is the customary method of obtaining business. Here, in effect, control over output is exerted through a sort of control over prices. All participating firms agree to submit all tenders in the first instance to their association, where the estimates are confidentially registered, and either a percentage (to be subsequently paid in and divided up) is added to each, or a tender price is decided upon which each shall quote on the understanding that the firm receiving the contract shall pay an agreed percentage into the pool.

An important feature of many trade associations, and in some a central feature, is the provision of an information service as to the credit standing of trade customers.

Some trade associations, amongst them BEAMA (British Electrical and Allied Manufacturers Association), the Society of Motor Manufacturers and Traders, Iron and Steel Trades Federation, and British Engineers' Association, have important statistical services, and issue information of various kinds to their members. The Federation of British Industries has also many service departments, in addition to statistical services, and issues a monthly Bulletin on economic conditions.

Shipping Conference.—A particular form of trade association operates in shipping and is known as the Shipping Conference system.

If a steamship line is to maintain a regular service between definite ports, however small may be the amount of cargo offering, it must be able to rely upon the regular support of the shippers of the cargo, and must safeguard itself against the unrestricted competition of tramp steamers, and of other outside vessels which are bound by no such obligations and are able to cut in at any moment when traffic conditions on the route are favourable and take the most profitable cargo at a reduced rate. To provide such safeguards, Liner Conferences have been very widely established.

They are combinations or agreements, sometimes national, more often international, among steamship lines in particular trades ; and their object, as regards the shippers of cargo, is to secure regularity of support in return for regularity of service at fixed and uniform rates. This regularity of support is secured in various ways. The most obvious way perhaps is where the nature of the cargo is such that vessels specially constructed or equipped are essential for its carriage—for example, of produce which has to be kept in refrigerators. This special condition, which precludes haphazard "tramp" or other competition, is not particularly common.

Another tie of a "service" character exists where the lines provide special port facilities for the handling of the cargo before and after the voyage, without which facilities trade in certain commodities would be rendered very difficult or impossible.

By far the most common method, however, is what is known as the "deferred rebate" system, under which traders who can show that during a defined period already expired they have given all their custom to a Conference Line obtain a rebate, usually of 10 per cent., of the freights they have paid. Another form of the same thing is a contract whereby a trader undertakes during a defined future period to give all his custom to the Conference Line, and in return is charged a lower rate of freight than shippers who have entered into no such arrangements. The contract method is not so common as the deferred rebate method, and has really arisen owing to the prohibition by South African law of the deferred rebate system in the South African Trade. The contract method is in use in this

trade, and also by option in the Australian and New Zealand trade.

In spite of the monopolistic tendency of such agreements, there is to-day among shippers a consensus of opinion in favour of the agreements in view of the regularity of service which they make possible; and the Balfour Committee on Industry and Trade in its *Final Report*²¹ (1929) endorsed that opinion, while expressing the view that the alternative of deferred rebate or contract methods should be available in all trades, and should be financially equally advantageous to the shippers.

The Balfour Committee also emphasised the desirability of the existence of Associations of Shippers because, although in their view the semi-monopolistic position of the Conference Lines is necessary, and from the service point of view desirable, yet, as with any other monopoly, the possibility of abuses has to be guarded against, and this can best be effected by strong associations of the persons who would be adversely affected by such abuses. The growth of such associations has been slow in comparison with similar organisations in other industries, but the existence of such bodies as the Manchester Association of Importers and Exporters, the South African Trade Association, the Australian and New Zealand Merchants' Association, etc., show that the movement is well started.

It is hardly necessary to emphasise the importance to a trading country such as the United Kingdom of cheap sea transport. According to the Balfour Committee's Report, the general level of freights was in 1929 quite satisfactory, but it was considered that harbour dues and loading charges were high to a burdensome degree, and that therefore it was of great national importance that the maximum efficiency of method and organisation should be adopted at the harbours, so that those charges might be reduced.

THE CO-OPERATIVE MOVEMENT

The Co-operative Movement may be described as an association of consumers, and is in form somewhere between a capitalistic and a socialistic organisation. It is capitalistic in that it pays interest at a fixed rate on its share of loan capital—but it is not capitalistic in that the surpluses or profits which are earned are distributed, not to shareholders in proportion

to their shares, but to members in proportion to their purchases.

Co-operative societies actually embrace three separate forms—the producers' society, the consumers' society, and the wholesale society. All three forms exist in this country. The Producers' Society, as a separate entity, has had very little success, and its entire production was but an insignificant fraction of the product of capitalistic industry, amounting to £6 millions, in 1930.

Producers' Societies, where they exist, are confined mainly to industries which do not call for much capital equipment—such as boot-making, clothing and the printing trades. Even so, they have usually had to raise their capital outside their own working membership, because the ordinary workman of to-day does not possess enough savings to provide the means for his own employment; and even if he did, he would be unlikely to take the heavy risk of embarking it in a producers' co-operative society, which might not only be more prone to failure than other openings for his investments, but also in its failure would sweep away simultaneously his savings and his job.

Consumers' or retail distributive societies have grown to a really important magnitude—the aggregate sales turnover in Great Britain for 1930 amounting to over £215 millions.⁸

The separate consumers' societies are supplied largely through the Co-operative Wholesale Society, which controls a number of important factories and shipping interests, and has a large industrial production. The value of its productions in 1930 amounted to £29 millions. The Scottish Wholesale Society was responsible for another £5½ millions. There is also a considerable trade with the wholesale societies of a number of continental countries; while included in the C.W.S.'s activities are banking and insurance departments.

MONOPOLY CORPORATIONS

Certain trading interests in the field of public utilities enjoy a monopoly under special Acts of Parliament for each undertaking. This is not merely an expensive process in itself, but each undertaking has to accept certain conditions, relating to accounts and prices. It is not necessary to examine these

matters further here, beyond noting the following statistics for 1930 of the principal classes of undertaking falling in this category.

	Capital.
Railway Companies *	£1,098,067,005
<i>L.M.S.</i>	£413,778,857
<i>L.N.E.</i>	£376,551,274
<i>Southern</i>	£160,331,041
<i>G.W.</i>	£147,405,933
Gas Companies (not under Local Authorities),	89,771,505
Electricity Companies	120,415,274

* *The Accountant*, 1 April, 1933.

PUBLICLY-OWNED UNDERTAKINGS

Finally, there are the Municipal and Governmental enterprises which are, in a sense, a form of co-operative enterprise where the members are the rate-payers or the tax-payers—who, at any rate in theory, get in the former case the benefit of reduced price of service, or reduced rates; and, in the latter, national security, protection from exploitation, and proper performance of essential national services.

This form of enterprise seems to be particularly suited to the operation of the main public utility services. Examples of the main public utility services are the supply of water, gas, electricity, and tramway or omnibus transport by municipal authorities, and postal and telephone services by the central government. The market for all goods and services provided by municipal undertakings is a local one, and one in which, except possibly in the case of transport, the municipality usually meets with no competition.

In the case of gas and electricity especially, where fixed charges are heavy and concessions to use the streets, etc., are required, the municipality is in a very strong position; and this, of course, also has force in the question of local transport.

The principal objection which is levelled at these municipal enterprises is based on their freedom from competition. It is argued that there is an absence of vital incentive towards efficiency and low cost of production or operation. This criticism is indeed one that is bound to be made against the whole conception of public ownership. With regard to this criticism as applied to municipal enterprises, there is a reply in

that public criticism of inefficiency is induced by comparison of one municipality with another, and that this criticism in the last resort can take the form of changing the elected persons who are held responsible for the enterprise. It is not certain, however, that this method of public control is very effective; and the main reliance must be on the integrity and ability of the rate-payers' elected representatives, as to which a widespread knowledge of the principles of industrial administration may be the best safeguard.

Public ownership falls into two sections :

Undertakings operated by Local Authorities.

Gas (capital £70,590,646).	Housing.
Electricity (capital £197,890,180).	Markets.
Water.	Abattoirs.
Transport.	River Conservancy Boards.
Docks and Harbours.	

*Undertakings operated by the Government.**

Dockyards and manufacturing establishments of the Admiralty.
Manufacturing establishments of the War Office and Air Ministry.
General Post Office.
Stationery Office.
Office of Works.
Ordnance Survey Departments.
Royal Mint.
Commissioners of the Crown Lands.
Prison production of goods.

Information under certain of these heads is available from the 1930 Census of Production,¹⁶ and the table on p. 86 is derived from this source.

During the second world war a number of undertakings specifically created for war purposes have been operated by

* In the King's Speech at the Opening of Parliament on 14th August, 1945, the announcement was made that a Bill would be introduced "to nationalise the coal-mining industry, a part of a concerted plan for the co-ordination of the fuel and power industries."

1930 *Census of Production. Government Departments.*

		Output, £.	Average No. Employed.			
			Total.	Oper- atives	Admin- istrative	Per cent.
	Total	28,528,000	89,615	79,650	9,965	11.12
Admiralty	Total	12,489,000	40,114	37,343	2,771	6.91
Dockyards	.	8,745,000	29,553	27,451	2,102	7.11
Ordnance Depots	.	2,709,000	6,099	5,699	400	6.56
Civil Engineering De- partment	.	747,000	4,029	3,793	236	5.86
Naval Victualling Yards	.	25,000	53	51	2	3.77
Electricity Undertak- ings	.	263,000	380	349	31	8.16
War Office	Total	3,320,000	12,290	10,737	1,553	12.64
Ordnance Factories and Workshops	.	2,750,000	11,057	9,540	1,508	13.64
Clothing Factory	.	372,000	1,027	1,000	27	2.63
Bakeries	.	89,000	77	71	6	7.79
Electricity Undertak- ings	.	109,000	129	117	12	9.30
General Post Office	Total	11,708,000	33,341	27,944	5,397	16.19
Telegraph and Tele- phone Services	.	11,491,000	32,783	27,438	5,345	16.30
Other Departments	.	217,000	558	506	52	9.32
Stationery Office	Total	526,000	1,454	1,351	103	7.08
Office of Works	Total	365,000	1,986	1,915	71	3.58
Ordnance Survey Department	Total	120,000	430	360	70	16.28

FIG. 1.

the Government, and some of them may be retained permanently in a more or less modified form.

STATUTORY CORPORATIONS

There is another group of public undertakings which are operated by officially appointed *ad hoc* bodies, such as :

British Broadcasting Corporation (B.B.C.)—whose main revenue is derived from the Post Office as a proportion of receipts from the sale of Wireless Licences.

Central Electricity Board. This operates with finance borrowed from the public under the Electricity (Supply) Act, 1926. The Board was set up as a result of the recommendations of the Weir Committee (1925) to function as an executive body responsible for the erection of the "Grid" scheme of transmission lines, covering the whole country, which had been proposed by the Electricity Commission. "The Board is an authorised Undertaker (*i.e.* supplier) charged with the duty of supplying electricity in bulk either directly or indirectly to Local Authorities, Power Companies and other Companies and Bodies authorised to supply electricity within any area. What may be referred to as the 'wholesale' side of the Electricity Supply Industry is thus vested in the Board."*

London Passenger Transport Board. The Board was set up under a special Act and came into operation on July 1, 1933, with a capital of over £111 millions. The object of the Act was to centralise the whole of London passenger transport under public instead of private ownership. Accordingly the entire system of underground railways, buses and trams (including tramways formerly operated by the London County Council and powers possessed by the latter to run river passenger steamboats if they so desired) was transferred to the Board. The Board also exercises certain functions over suburban railways. The members of the Board are appointed by Trustees, while on questions of fares and facilities the arbiter is the Railway Rates Tribunal.

* When electricians climb down from a 70 ft.-high steel tower near Fordingbridge, on the outskirts of the New Forest, at eleven o'clock this morning, the greatest scheme of its kind in the world—the grid scheme—will have been completed. The tower is the last of 26,265 pylons that have been built by the Central Electricity Board over Great Britain as part of their national transmission scheme.

The five-and-a-half year scheme has cost £27,000,000, and has meant employment, directly or indirectly, for 200,000 workers.

Altogether the 273 transforming and switching stations in the grid will have a transforming capacity of 11,000,000 horse-power. The national transmission system has been split up into nine main areas, and the tower which will be completed to-day is the last in the southwest of England scheme. Some 2,500 miles are in operation at present. Towards the end of 1934 the whole system will be working, carrying a wholesale supply of electricity to almost every corner of Great Britain.

It is estimated that the grids will be loaded to the extent of 70 per cent. in 1935 and fully loaded in 1940, when the output of electricity will be 25,000,000,000 units. (*The Times*, Sept. 5, 1933.)

UNDERTAKINGS OPERATED BY GOVERNMENTS IN OTHER COUNTRIES

Experiments made and methods adopted in other countries, notably in Germany, Italy, the United States and the U.S.S.R. in the direction of public ownership and operation of commercial and industrial undertakings are interesting and significant. Limitations of space preclude their discussion in these pages, but the student is recommended to seek out and ponder carefully all available information on these omens.

CHAPTER IV

FINANCIAL RESPONSIBILITY AND CONTROL

This chapter is intended to help the student to visualise the essential relationship there must be between the industrial unit and the mechanism of finance. Industry in its units is as dependent on finance as individual passengers in London's Tubes are dependent on a forced supply of air. Whatever those competent to criticise may have to suggest, in order to make the financial system still more helpful than it is, there can be no doubt that on the Banks rests a tremendous responsibility to industry and the community. It is therefore the clear business of those accepting responsibility for industrial administration to be as well informed as possible regarding the financial system on which the very life of industry depends. Only an introduction to its study can be attempted here.

IN the operations of industry financial considerations play, and must always play, an important and indeed controlling part; and it is the object of this chapter to show in outline how finance is itself controlled, and where responsibility rests for the exercise of that control.

It is one thing to understand that industry cannot proceed without money and/or credit, but it is another and perhaps more difficult thing to understand how money and credit is made available at the place and time that it is required. It is another thing, again, to realise that the total money and credit available, at all places at a given time, influences the whole economic and therefore the whole industrial situation.

To attempt to visualise the place held by Finance in industry to-day, it is essential to begin by explaining what is meant by the word "Finance." In its more superficial sense it clearly means, or can be taken to mean, any transaction or operation which involves the use of money. Such a definition, however, is not very helpful, because the difficulties attending the understanding of the financial function are

concentrated away from that part of it which merely relates to the payment and receipt of cash.

The real function and real complexity of finance, as distinct from money, lies not so much in the settlement of indebtedness by the passing of cash as in the methods by which settlement can be delayed by means of credit until cash becomes available, or by which one type of indebtedness can be cancelled by the creation of another, as, for example, by borrowing, which is founded, of course, on credit.

For present purposes, Finance may very roughly be defined as the sum-total of all the arrangements whereby credit is brought into play in commercial operations. Such a definition is admittedly far from perfect, and it will later be seen where it fails to be accurate, but it does at least serve the valuable purpose of narrowing the scope of the problem, and concentrating attention upon essentials.

It is logical, therefore, to commence by some analysis of the characteristics and use of credit as that term is understood to-day.

The obvious definition of credit—that it is “the power to borrow”—does not call forth any very clear picture of credit in operation, and Lavington’s definition, “a condition which enables a person to extend his control, as distinct from his ownership, of resources,” is much better in this respect.

In other words, credit must be envisaged as a superstructure built upon money just as in a Gold Standard country paper currency is a superstructure upon actual physical gold.

Classification of Credit.—It is possible to study the “quality of credit” from the standpoint of either “him that gives” or “him that takes,” and also from the standpoint of the terms upon which the credit is given.

A diagram is reproduced on the next page from *Economics of Banking, Trade and Finance*,³⁷ by Stephenson and Branton, which illustrates a possible classification of credit, and brief notes follow in exposition of this diagram.

(a) *Production Credit*.—The producer’s need for credit arises from the normal state of affairs in which production takes place in advance of, or, rather, in anticipation of, demand.

The need arises at two stages. First, before production has commenced the means must be found for providing those Capital Goods—plant, buildings, etc.—by the use of which

DIAGRAM ILLUSTRATING THE POSSIBLE CLASSIFICATION OF CREDIT.³⁷

CREDIT
may be classified according to

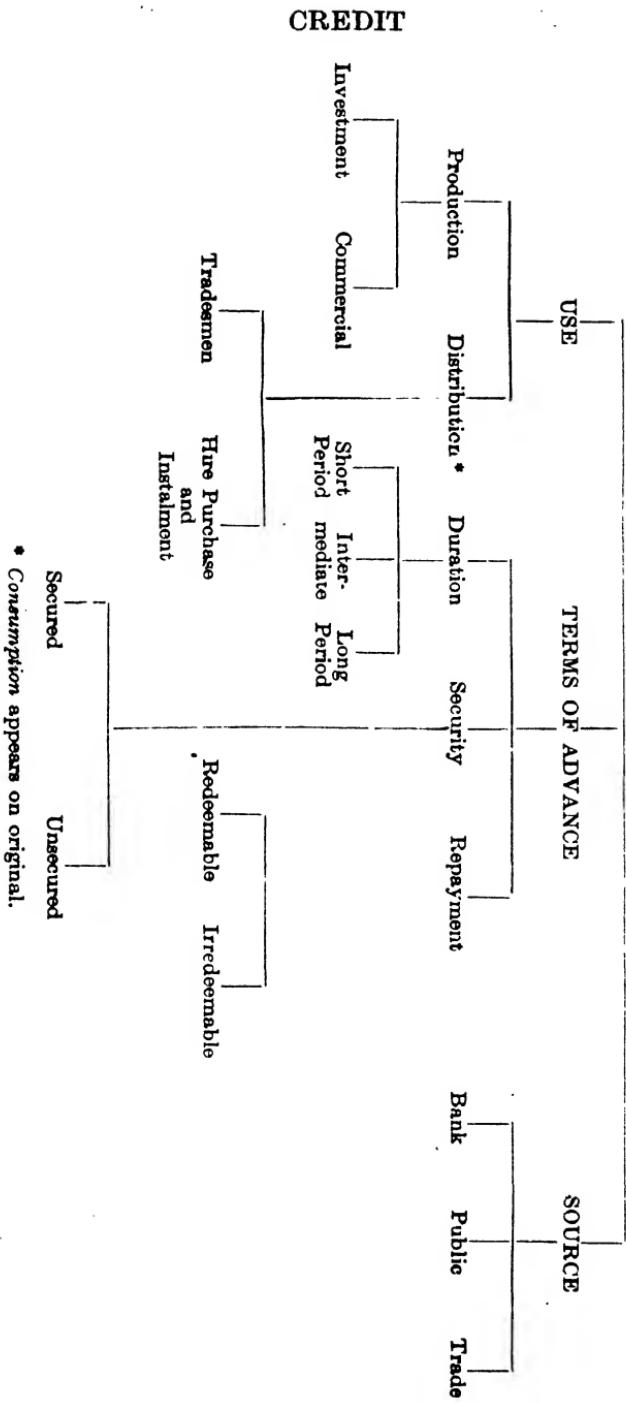


FIG. 2.

production can begin. The function of credit at this stage (apart from borrowing) is to induce people to provide funds for the purpose described, by *investing* in the new concern. It is typical of modern methods that an increasing number of small investors are expressing their faith in the efficiency of large-scale organisations by investing their savings in them at the expense of smaller organisations. The credit of the large concern is thus to-day more than proportionately greater than that of the small concern.

The second stage at which credit is required by producers is during the actual course of production, when wages and other expenses have to be met in order to produce articles not yet sold, and still less paid for. To a large extent this difficulty is overcome by commercial credits of one kind or another, which enable payment for purchases and services to be withheld for a varying time, depending upon the degree of credit enjoyed by the producer.

The acuteness of this problem of "working capital" obviously varies from trade to trade—those trades handling articles taking a long time to produce, or of high value and therefore probably taking a long time to sell, will suffer most, and vice versa—while seasonal trades will experience important and regular fluctuations in the volume of working capital required.

Viewing the situation broadly, however, it is true to say that, where there is a time lag between the commencement of production and the completion of sale, there is a corresponding time lag between the incurring of the costs of production and the payment of the liabilities incurred therein. Wages, of course, are exempt from such a time lag, and, where they cannot be paid out of accumulated past profits, they have to be financed by money reserved out of invested capital, by bank loan or other means by which actual cash can be obtained.

(b) *Distribution Credit*.—In the diagram it will be seen that this heading has been subdivided under "Tradesmen" and "Hire Purchase and Instalment." The distinction between these lies more in legal aspect, and in the ultimate method of payment, than in any fundamental difference in principle.

To take first the "Hire Purchase and Instalment" * heading, there are two kinds of arrangement to-day in widespread use

* See p. 181.

whereby, on the basis of a legal contract and a predetermined method and rate of payment, goods are handed over to consumers on credit. The difference between Hire Purchase Agreements and Instalment Payment Agreements relates to the moment at which property in the goods passes from seller to buyer. Goods sold under hire-purchase remain the property of the seller until payment has been completed. Under instalment selling, the property passes to the buyer on payment of the first instalment.

From the point of view of credit, the difference is that with hire-purchase the goods (in so far as they are recoverable in the event of default), constitute some security for the debt. Under instalment selling, the security depends on the solvency of the buyer, supported by any special arrangements, such as an insurance policy, that may be entered into.

The most important point about such arrangements is that they constitute a means whereby credit for large amounts can be given to individuals, because the risks of non-payment are usually born by finance companies; which, because the individual agreements are based on written legal contracts, can take over large numbers of agreements, the profits arising out of the interest charged providing what amounts to an insurance fund against individual bad debts.

The credit allowed by tradesmen is not of this organised character, and is granted free of any interest charge even in the form of loss of cash discount, as this is not usual in transactions between retailers and their customers. This type of credit, which is very widespread, especially in connection with certain groups of commodities such as food-stuffs, is often more a matter of convenience to the customer than of necessity.

Under the heading of Distribution Credit ought also to be included the credit extended by manufacturers to wholesalers, and by wholesalers to retailers. Such credit is often of vital importance to traders, who in turn are expected to give credit, and its length varies between trades, according to custom, the observance of the credit period being more or less controlled by the withdrawal or reduction of discounts after the lapse of the customary time.

(c) *Public Credit*.—It is important to consider here in what respect public credit—or Governmental credit—is on a different footing from ordinary commercial credit. In fact the differ-

ences are not very great, at any rate in principle. The facility with which a Government or Municipality can raise loans depends directly on the confidence of the investing public, in the country in question or abroad, in the ability of the Government or Municipality to meet the obligations which constitute the terms of the loan; and the rate of interest offered reflects the estimate of experts as to what that opinion will be, coupled, of course, with considerations of the supply and demand for capital for other investment at the moment.

The major difference between the State and the municipal or private loan is that the State may repudiate its obligations as to principal or interest without directly suffering anything but a loss of credit. This loss, however, is usually so important, and carries in its train such adverse effects upon business in general, that such defaults have hitherto been rare.

A more common way out of an excessive burden of loan obligations is a conversion of the loan from the original rate of interest to a lower rate. Such conversions, at least in modern times and in this country, are usually voluntary on the part of the lenders—that is to say, lenders are offered, at some period usually provided for in the original terms of the loans, the alternative of redemption (a return of the money originally lent) or the continuation of interest payments at a new lower rate.

The nature of credit can now be shortly stated.

It has, in effect, been shown that credit is the basis for the provision of those funds by means of which both private and public enterprise are enabled to commence production in anticipation of demand and of income; and also that credit is the basis upon which the gap between the commencement of production expenses and the receipt of income from sales may be bridged, by the delaying of payment of liabilities by arrangement with creditors.

It has further been shown that, in so far as credit functions enable payment to be delayed, it is customary throughout commerce for those expected to give credit, also to receive credit from those to whom they in turn owe money; so that there is in practice an almost infinite number of what might be called "wheels of credit," each of which begins to revolve when some fresh indebtedness is incurred and ceases when it is settled. In

so far, however, as credit is used for the obtaining of actual funds, there has to be some organised method—the Commercial Bank—of utilising to this end the funds available for lending.

Commercial Banks.—In the Macmillan Report on *Finance and Industry*¹⁸ the function of commercial banks is explained in the following terms.

The joint stock-banks, or deposit banks, are the banks with which the public in general deal. They carry out many familiar services for their customers, but we are concerned mainly with their functions as recipients of deposits and as lenders to trade and industry, the financial market and other borrowers, and the mechanism which governs generally their operations.

It is not unnatural to think of the deposits of a bank as being created by the public through the deposit of cash representing either savings or amounts which are not for the time being required to meet expenditure. But the bulk of the deposits arise out of the action of the banks themselves, for by granting loans, allowing money to be drawn on an overdraft or purchasing securities a bank creates a credit in its books, which is the equivalent of a deposit. A simple illustration, in which it will be convenient to assume that all banking is concentrated in one bank, will make this clear. Let us suppose that a customer has paid into the bank £1,000 in cash, and that it is judged from experience that only the equivalent of 10 per cent. of the bank deposit need be held actually in cash to meet the demands of customers; then the £1,000 cash received will obviously support deposits amounting to £10,000. Suppose that the bank then grants a loan of £900; it will open a credit of £900 for its customer, and when the customer draws a cheque for £900 upon the credit so opened, that cheque will, on our hypothesis, be paid into the account of another of the bank's customers. The bank now holds both the original deposit of £1,000 and the £900 paid in by the second customer. Deposits have thus increased to £1,900, and the bank holds against its liability to pay out this sum (a) the original £1,000 of cash deposited and (b) the obligation of a customer to repay the loan of £900. The same result follows if the bank, instead of lending £900 to a customer, purchases an investment of that

amount. The cheque which it draws upon itself in payment for the investment is paid into the seller's bank account and creates a deposit of that amount in his name. The bank, in this latter case, holds against its total liability for £1,900 (a) the original £1,000 of cash and (b) the investment which it has purchased. The bank can carry on the process of lending, or purchasing investments, until such time as the credits created, or investments purchased, represent nine times the amount of the original deposit of £1,000 in cash.

The process is much the same when we remove the assumption that there is only one bank. The credit granted by one bank may reach the accounts of customers in another bank. There is thus established a claim by the second bank upon the first for cash, and the ability of the second bank to grant loans is improved in so far as that of the first bank is reduced. Over the banking system as a whole, therefore, loans and investments made by the banks increase their deposits. There is, however, a limitation on this process. A bank which is actively creating deposits in this way will naturally find that a considerable part of the cheques drawn against it will be in favour of other banks. It will thus lose part of its cash reserve to those banks and must proceed to limit its loan operations if its normal cash ratio is to be maintained. In practice, therefore, no one bank can afford to pursue a policy of creating deposits by making loans or investments, which is much out of line with the policies of other banks.

The cash which the banks hold is partly in the form of bank notes and coin maintained in tills and reserves to meet current demands by customers and for exigencies, and partly in the form of a deposit with the Bank of England—the bank of the bankers. The latter credit affords first the means of settling day-to-day balances between banks, and secondly the means of obtaining any further supplies of notes or coin that they may need for current use. A further cash item is represented by balances with other banks and cheques on other banks in course of collection. These claims on other banks, which are settled within a day or two, usually amount to about 3½ per cent. of the deposits, varying, of course, with the amount of business done by the bank.

Behind the actual cash reserves the banks maintain a

volume of assets which are readily realisable in case of need to meet withdrawals. In order of liquidity these are:— money at call and short notice lent to the bill market and to a small extent the Stock Exchange, usually about 7 per cent. or 8 per cent. of deposits; bills of exchange and Treasury bills, usually about 13 per cent. to 15 per cent. of deposits; and investments consisting mainly of a mixture of short-dated and long-dated bonds and stocks (largely British Government securities), usually about 16 per cent. of deposits. The remaining large item on the assets side consists of the debts of the customers of the banks in respect of the loans and advances granted to them by the banks, the normal percentage of which varies for different banks between 50 and 55 per cent. of deposits.

*Report of Committee on Finance and Industry.*¹⁸

It is possible by studying the above quotation to get some picture of the problems which have to be solved by the commercial banks.

The paramount obligations which rest upon a bank are two—first to safeguard the deposits entrusted to it, and second to invest the available funds in such a way as to secure, as far as possible, a consistent level of profits in the interests of its shareholders. Both these objects can best be secured by spreading the risks involved over a very wide field. This principle of spreading, which is of course simply the principle of insurance, is the reason for the adoption of the conventional average proportions of investments in various directions which have been referred to above.

One of the major controlling factors over these proportions is the fact that the bulk of the deposits with a bank are liable to be withdrawn at very short notice. Consequently the bank has to arrange its investments so that a sufficient proportion can also be quickly realised. However, although the banks, using their great experience of the normal cash demands of their depositors, do preserve more or less fixed proportions of their funds in investments with varying degrees of quick realisability, it cannot be disguised that the ultimate factor which preserves the safety of the commercial banking system is the unlikelihood of all depositors requiring, or, through fear, demanding, the

return of all their deposits at the same time. If that unlikely state of affairs should come about with the customers of a single bank—if there should be a “run” on that bank—then the other banks will probably be able to see it through the crisis; but if it happened simultaneously to all banks, then only the very rapid issue of a flood of new paper currency from the Central Bank would be able to avert the crash, but only at disastrous cost to the economic structure, as witness the experience of Germany after the first world war. To prevent a threatened crisis of this nature, a banking moratorium is sometimes declared, while steps are taken to restore public confidence.

Before leaving this subject, it is important to realise that the existence of bank branches plays an important part in that spreading of risks which has been referred to as so vital. The existence of branches spread all over the country, of which it remains typical that particular industries are identified with particular localities, means that within the same single banking organisation certain branches are always in contact with and receiving deposits from those industries which are at the moment prospering, and that funds to allow branches in less fortunate areas to make advances to their customers thus become available without strain on the resources of the bank as a whole.

A further advantage, technically, of widespread branch-banking, implying as it does an ever-increasing number of customers, is that it results in a relative economy in reserves. This is due to the obviously increased probability of cheques presented by one customer being payable by another customer of the same bank—thus resulting in no other operation beyond two book entries and eliminating the passing of funds from one bank to another. In effect, therefore, the volume of cash that has to be kept in reserve is smaller in proportion to the total business done—or, to put it in another way, the volume of transactions between customers of the same bank can, other things being equal, be very largely increased without calling for an increase of the cash reserve.

This briefly explains the operations of commercial banks; and perhaps the major point which emerges is the method by which a comparatively large volume of loans and over-drafts to customers (based on their credit on the one hand, and, on the other hand, on the possibilities of keeping only a small percentage of cash reserves against deposits, which, in turn, are

increased by the granting of loans) can be created from a comparatively small volume of cash deposits.

The next step is to consider the functions of the Central Bank in controlling the total volume of credit and in other spheres.

Central Banks.—The functions of the Central Bank—in this country the Bank of England (which is now to be brought under public ownership)—may be divided into the following main categories :

- (a) Control of the total volume of credit.
- (b) Regulation of monetary policy.
- (c) Banking functions in connection with Governmental financial transactions, and as holder of deposits from the commercial banks (these banks' reserves).

It is to be noted that the Bank of England also transacts a private banking business with wealthy customers, but this Bank, as a rule, allows no interest on deposits.

In addition, the Bank of England has the important duty of maintaining close contact with foreign Central Banks, primarily with a view to co-ordination of international monetary policies.

The three main functions demand consideration in some little detail.

(a) *Control of the total volume of credit.*—The two points which must be made clear here are first, why control is necessary, and second, how it is effected.

In order to see why it is necessary, reference must be made to economic theory regarding the relationship of the volume of money and the general level of prices. It is fairly obvious that the general level of prices at any given moment is the expression of the relationship between the volume of goods available for sale at a given moment and the volume of purchasing power available at the same moment. From this it follows that, so long as production remains constant, prices will vary only as the volume of purchasing power varies, and that a great increase in purchasing power will lead to a rise in the general price-level, since the supply of purchasing power has increased in relation to the supply of goods and the same quantity of goods will therefore command a larger quantity of purchasing power.

Now the security and well-being of commerce is based on the "realisation of settled expectations," and it is apparent

that this cannot be obtained when the general price-level is violently and continuously fluctuating. It is therefore of extreme importance that the volume of purchasing power should keep step with the volume of production—if anything, in the view of one leading economist, very slightly outstepping it, so that there would be a very slight and very gradual increase of prices, resulting in a permanent incentive to increased production.

How does all this affect the problem? In the above discussion the expression “purchasing power” has been deliberately used instead of the word “money” because the former includes bank credit. It is obvious that at any given time the total volume of purchasing power in the hands of the public is the amount of cash they have plus the amount they can borrow from the banks—if they borrow from each other the increases and decreases of purchasing power cancel out. Therefore, if control of the price-level is desirable, it must include not only control of the volume of currency, but also control of the volume of credit.

The next thing then is how control of credit is achieved. It must be said straight away that the exact effect of the Central Bank’s action in this way can never be measured; and really all that can be said is that it exerts an influence in the desired direction—the net effect being dependent on the strength of existing influences in the opposite direction.

The exertion of this influence by the Central Bank is brought about by two means :

Variation of the Bank Rate.

Purchase and Sale of Securities in the open market.

A clear explanation of how these operations were in normal times carried out and their effect appears in the Macmillan Report,¹⁸ already quoted, which reads as follows :

An alteration in the level of bank rate may be made for the purpose of correcting an outflow of gold due to a temporary disequilibrium in the balance of international payments. In such a case it may produce the desired result by its effect on international movements of short-term capital without any marked effect upon the internal position of this country. Or it may be designed to correct deep-rooted disparities in the price-level in this country as com-

pared with other countries, in which case it may have to be continued until the altered price for the use of money restrains or expands demand as the case may be. The mechanism by which this effect is transmitted is that by custom the clearing banks vary certain rates of interest, charged or allowed, by reference to the level of bank rate. While these normal rates are subject to many exceptions in practice, the general position (with occasional deviations) is that :

- (a) the rate of interest allowed by the clearing banks on London deposits repayable at short notice is about 2% below bank rate (at the time of writing 1½% below) ;
- (b) the rate of interest charged on loans and overdrafts is $\frac{1}{2}$ per cent. to 1 per cent. above bank rate, with an agreed minimum at present of commonly 4 to 5% ;
- (c) the rate of interest charged by the clearing banks on call money to the discount market is round about 1% below bank rate.

Thus an increase of bank rate brings with it an increase in the rates both for short money and for bank loans. It works both on the international position by attracting funds to this country or preventing funds from moving outwards, and on the internal position by discouraging borrowing from the commercial banks and so tending to a reduction of their deposits.

But the Bank also holds at command the power directly to increase or decrease the amount of purchasing media in the country by open-market operations. If the Bank purchases securities in the market the transaction is settled by crediting the drawing account of the broker or other party through whom they are purchased. This eventually leads to an increase in the balances of the joint-stock banks at the Bank of England. The Bank's holdings of securities will, of course, have been increased by the same operation. The deposits of the joint-stock banks at the Bank are the equivalent of cash, and the banks thus find themselves with more than their usual proportion of cash to deposits and are in a position to grant further loans to their customers or otherwise to create additional credit. Since the banks as a whole maintain a cash proportion to deposits of from 10 per

cent. to 11 per cent., they are, in fact, able to increase their deposits by some ten times the cash created by the Bank of England. By the opposite process a sale of securities by the Bank of England or the calling in of a loan will reduce the cash of the joint-stock banks and entail a reduction of their deposits. The Bank of England is thus in a position (provided that it has knowledge of the variations in the note holdings of the joint-stock banks) to exercise almost complete control over the amount of bankers' cash in the country, and thus, given the conventions which govern the transactions of the joint-stock banks, over the total volume of deposits within such limits as are set by the existence of the international gold standard. The bankers' cash may, of course, be reinforced by gold imports without action on the part of the Bank of England, but it is within the power of the Bank to take steps to offset any expansion in deposits which might thus arise.

*Report of Committee on Finance and Industry.*¹⁸

(b) *Regulation of Monetary Policy.*—It has been said that control of the volume of purchasing power implies control both of the volume of currency and the volume of credit; and it has been shown how important it is from the internal commercial point of view that the relationship of total purchasing power to total production should be maintained in approximate equilibrium. The problem has, however, an external aspect of equal importance. The import and export trade of no country can proceed smoothly (for reasons founded, as before, on the need for the realisation of settled expectations) in a world where the currency of one nation in terms of the others is constantly changing.

If all the nations of the world were on a metallic standard, say gold, and if that standard were operating freely and properly, then of course a permanent limit to such fluctuations is set by the "gold points." If, however, as is the case to-day, relationship to gold has largely been abandoned, then the valuation of one currency in terms of another, according to the Theory of Purchasing Power Parity, finds an equilibrium which is an expression of the relationship of the general price-levels in the two countries.

Apart from exceptional causes and influences, the stability

of international finance, when not on a basis of gold, depends in the first instance upon the stability of domestic price-levels, and this, as has been shown, depends on the maintenance of a steady relationship between production and purchasing power.

So far, consideration has been given only to the supply of money and credit from domestic sources. If, however, domestic funds are being spent or invested overseas, it is clear that the effective volume of purchasing power at home is being reduced. Alternatively the spending or investment of foreign funds here increases our domestic purchasing power.

The effect of these movements of funds is, of course, modified by the extent to which domestic funds invested abroad lead to increased purchases in the domestic market by the foreign borrowers, and vice versa.

Further, it is not possible for the financial authorities of any country directly to control the spending, as distinct from the investments, of its nationals. So that, as far as the inflow and outflow of funds over a national border are concerned, only a part of the transactions, those relating to investment, can be to any extent controlled by the respective financial authorities; and the final effect of such control must, in the last analysis, be somewhat indeterminate.

It is thus so far clear that the Central Bank in determining its monetary policy has at least three major factors to consider :

The volume of domestic bankers' credit.

The volume of currency.

The net import or export of capital.

The first and last of these three factors are dealt with ordinarily by the "Bank Rate" and "Open Market" operations already referred to; while the volume of currency, if it is not controlled by some more or less automatic factor (for example, in a country on the Gold Standard, by the stock of gold in the vaults of the Central Bank), is variable according to the decisions of the financial authorities of the country in question.

In modern times, complete departure from any relationship to gold has usually been coincident with a period of financial and economic stress; so that it has been difficult for Governments, faced with large budgetary deficits, to avoid the temptation to increase the volume of currency without reference to

any external standard of measurement by which the ideal volume might have been calculated.

In theory, however, a wise Government would scrupulously relate the volume of its paper currency to some standard which would reflect the general level of prices current at any given moment. Thus a sudden change in the price-level could be counteracted by a change in the volume of currency and of credit. Such control over the price situation, if it could be obtained, would be of supreme value; but it hardly needs to be pointed out that before it could be attained it would be necessary to measure, with some degree of accuracy, a very large number of conflicting factors, and that the compilation of suitable and reliable index-numbers presents a problem of the first magnitude.

(c) *Banking Functions in connection with Governmental Financial Transactions.*—The tremendous amount of money normally passing through the national exchequer (some £800 million being received and spent each year) * means that a very high degree of care and expertness is required if the smooth working of the general money market is not to be upset; and it will be apparent after a moment's thought that there must be many occasions when there is a large temporary excess of payments over receipts, and vice versa.

To quote Professor Gregory :²⁶ "From the present point of view the task of managing the finances of Government is essentially that of preventing a temporary excess of revenue over expenditure from depriving the money market of funds, and of preventing an excess of expenditure over revenue from flooding the market with funds. The first results in rising money market rates, the second in falling rates. The instruments of adjustment are the Bank's own lending operations and the manipulation of the size of the 'Floating Debt.'"

The Floating Debt consists of three items—Ways and Means Advances by the Bank of England, the current volume of Treasury Bills (representing the indebtedness of the Government to the Money Market), and Advances by Public Departments. At a time of surplus of revenue—such as the period January to March each year, when formerly the bulk of Income Tax was being paid in—the way to prevent the money market being short of funds is to reduce the Floating Debt by using the

* Compared with an estimated total national income of some £4,000 millions. The figures quoted are pre-war figures. See Preface.

temporary surplus for that purpose, and thereby putting the market in funds. The reverse operation eases the position when Expenditure is exceeding Revenue.

Apart from the management of the Government's day-to-day financial requirements, the Bank of England also holds the Savings Bank Deposits, Deposits by the Commissioners of the National Debt, sums held for the payment of Dividends on Government and other stocks, etc. The Bank also carries out the payment of dividends, redemption of principal when stocks mature, and all conversions of Government stocks.

Special Facilities for Credit.—To present a fuller picture of the nature and manifestations of Credit in the present order, it is necessary to say something as to other means by which industrial concerns are provided with capital and financial accommodation—though it is out of order in these pages to treat the subject as fully as its importance deserves. In addition to the facilities for credit provided by the banks in the course of their normal operations, mention may be made of the following special facilities :

Industrial and Commercial Finance Corporation Limited.—This Company was formed in 1945 with a capital of £15 millions, subscribed and held by the Bank of England, the clearing Banks and the Scottish Banks. It has power to borrow a further £30 millions, and thus will be in a position to assist industrial and commercial undertakings up to a total of £45 millions. According to the Memorandum of Association its main object is "To provide credit and finance by means of loans or the subscription of loan or share capital or otherwise for industrial and commercial businesses or enterprises in Great Britain particularly in cases where the existing facilities provided by banking institutions and the Stock Exchange are not readily or easily available." In short, it may be said that this applies to small and medium-sized businesses where their requirements for outside finance lie between the approximate limits of £5000 (up to which figure they might look to the banks) and £200,000 upwards (which they might hope to obtain by a public issue).

Finance Corporation for Industry Limited.—This Company was formed in 1945 by the Bank of England in conjunction with insurance companies and trust companies. Its authorised capital is £25 millions. It has power to borrow a further

£100 millions, and thus will be in a position to make advances up to £125 millions. Its main purpose is to assist in the provision of capital for the re-equipment and development of industry for the purpose of assisting it to increase its efficiency and so to help towards the maintenance and extension of employment. It will operate in circumstances where normal banking assistance cannot be looked for, where a public issue cannot be arranged, where the amount sought is more than can be expected from the usual sources, or where the nature and scope of the preliminary enquiries would impose too great delay.

For fuller information on both these companies the student is referred to the columns of "The Financial Times" for 24th January, 1945.

Investment (Control and Guarantees) Bill, 1946.—Under Clause 2 of which the Treasury is empowered to guarantee loans up to an aggregate of £50 millions in any one year "for the purpose of facilitating the reconstruction or development of an industry or part of an industry"—i.e. those facilities are for private industry, and not for the financing of the purchase and subsequent running of nationalised industries.

Agricultural Mortgage Corporation, Limited.—This Corporation, the issued Capital of which is £750,000 held by various Banks, was formed in 1928 with the principal object of raising money by issue of debentures, debenture stock, or other like securities and of applying it (a) in making advances on first mortgages of agricultural or horticultural properties in Great Britain, and (b) in making advances under the *Improvement of Land Acts 1864 and 1899*. The Corporation may also borrow from H.M. Government up to £2½ millions.

Outstanding advances repayable to the Corporation stood at about £7 millions in 1945.

Export Guarantees Acts.—The Act of 1945, which with the others is intended to assist *inter alia* the post-war foreign trade of this country, enables the Board of Trade to incur liability up to a total of £200 millions in respect of guarantees given for that purpose. It provides other facilities, and should be read in conjunction with the Export Guarantees Act 1939 (the principal Act) and with that of 1937.

*Bretton Woods Agreement.**—Because the satisfactory operation of facilities for credit within this country depends to an important degree upon a healthy condition of international credit, reference should be made here to this achievement. At Bretton Woods, U.S.A., in 1944 an International Conference arrived at a series of proposals for the facilitation of the conversion of the currencies of different countries into those of other countries at rates of exchange which should not fluctuate so widely as to be inoperative.

These financial proposals were linked with other schemes worked out at Hot Springs and at Dumbarton Oaks, U.S.A., having different objectives, these various interconnected plans being directed towards the stability of international economy in the post-war years. The Bretton Woods proposals envisaged an :

International Bank for Reconstruction and Development with a total capital of £2,500 millions, to be subscribed by countries who are members of the Bank mainly on the basis of their quotas in the International Monetary Fund, the object being to enable a borrowing nation to obtain long-term loans which it might not otherwise be able to get on reasonable terms, if at all, and thus to assist in the expansion of world trade.

International Monetary Fund, with a capital of £2,200 millions to be derived from gold, exchange convertible into gold, and especially from currencies, contributed on the basis of agreed quotas of the member countries, the object being to enable a high degree of stability of exchanges to be maintained with a minimum of pressure on the internal economic policies of the member countries. The Fund would not come into full operation until after a “transitional” period of from three to five years.

The vast extent of the field of operations, the intricate objective and subjective problems involved, the physical limitations and vulnerable nature of the Fund, and the peculiar facility with which wrecking activities both overt and covert can be conducted on an immense scale in this elusive medium, constitute a formidable array of obstacles ; but “If hopes are dupes, fears may be liars,” and the development of the operations

* For a lucid discussion of the Bretton Woods Agreement, see the P.E.P. Broadsheet of September, 1944.

of the Bank and the Fund will be watched hopefully, if somewhat anxiously, by the whole world.

Investment by the Public.—Apart from those already mentioned there are many important sources, including in particular the financial trusts, but for present purposes reference will be made only to direct participation by the public in membership of industrial concerns by taking up shares through this familiar channel of investment.

The actual methods by which the general public are invited to put funds permanently or semi-permanently at the disposal of particular enterprises, and by which those funds are collected and put to work, are controlled in great detail by the Companies Act, of which a general outline is given in Chapter II.

The essential part (and the part to which the law pays great attention) is the preparation of the statement to be brought to the notice of the public—the prospectus. The prospectus is very often, in fact usually, advertised in the Press, and often is exhibited on the counters of the bankers to the issue. The Issuing Houses, to which further reference is made below, also make themselves responsible for placing copies of the prospectus in the hands of likely investors. The next question is the vital one whether the belief of the public in the enterprise contemplated is sufficient to induce them to take up the issue. The risk that they will not do so is always present in varying degree, and may be borne by the company or the Issuing House, according to whether the House offers the issue on behalf of the company for a commission, or actually takes the whole issue itself on the chance of disposing of it to the public at a higher price. In either event, the risk may be spread by having the issue “underwritten,” or in other words by making agreements for a price—underwriter’s commission—with various people or concerns that, in the event of any part of the issue not being subscribed for, the underwriters will between them take it up. Such commissions are obviously in effect straightforward Insurance Premiums.

There are certain large Issuing Houses—such as Barings—which confine themselves largely to International issues. The bulk of industrial issues are handled by certain of the larger Stock Exchange firms, while the Bank of England deals with domestic Government issues.

The final step, the actual receipt of the public's subscriptions, is merely a question of accounting, and may be carried out by a joint-stock bank or by the Issuing House, or by the two jointly.

Stock Exchange.—The essence of the ordinary investment in shares is that the investment itself is permanent and irredeemable. It is therefore essential that the large majority of investors who do not wish to tie up their money for ever should have some means of making transfer of their shares to persons willing to buy them. For this purpose the Stock Exchange exists as an organised clearing house through which arrangements are made for shares to change hands. The members of the Exchange consist of dealers and brokers. The stock-brokers have offices where they receive from their clients selling or buying orders for shares. They use the Exchange to find through the medium of a dealer another broker who is prepared either to buy the shares they are offering or sell to them the shares they are requiring. When this has been done, the transaction is made effective by a Contract Note, and is subsequently embodied in a "Transfer," setting out the shares that shareholder A in a particular company is selling to B (desirous of becoming a shareholder in the company) and the consideration to be paid for them. Stamp duty has to be paid by the buyer on the actual amount of the consideration-money.

The certificate in the name of A together with the transfer form signed by A before a witness, who also signs, is passed by A's stockbroker to B's stockbroker, and the latter, having obtained the witnessed signature of his client to the transfer form, sends the transfer and certificate to the Secretary of the company concerned, in order that the change of ownership may be registered in the company's books; and that officer, after scrutiny of the transfer, cancels the old share certificate (in the name of A the seller) and issues a new certificate in the name of B the buyer. For his various services the stockbroker charges his client a "brokerage" commission on each transaction of purchase or sale. The dealer (the "Jobber"), through whom the broker buys or sells, is rewarded by a difference between his buying and his selling prices. The foregoing outline is subject to technical variation in certain circumstances, and is to be taken as being only typical of the procedure involved.

As is the case in the produce exchanges, a large proportion of Stock Exchange transactions are not "genuine," that is, they do not represent actual transfers of shares—nominal purchase being followed quickly by nominal sale, and vice versa, any difference in the value of the shares between the dates of the two transactions being settled between the broker and his client.

While there may be little to be said for the moral value of Stock Exchange speculation, in terms of economics it sometimes has a certain value. Speculation in shares is primarily the expression of the speculator's opinion as to what is likely to happen to the value of those shares in the future; and, to the extent that many opinions coincide, the foreseen change will tend to come about sooner and with less violence than if it had not been so anticipated. The curve of change is thus smoothed out, and a moment's thought will show how this is to the general good. It must not, however, be thought that this effect is always produced. The speculators may be wrong, they may be endeavouring to create a movement instead of merely foreseeing one; or, what is perhaps most likely, their operations may very considerably exaggerate what would otherwise have been a comparatively small movement. This may lead to boom, followed by slump, with the result that the small investor is involved in loss.

The King's Speech at the Opening of Parliament on 15th August, 1945, made reference to the proposed setting-up of machinery for the effective planning of investment; but at the time of writing it is not clear to what extent a National Investment Board will affect the private investor.

CHAPTER V

FINANCIAL STATEMENTS, DEPRECIATION AND VALUATION

Few can paint or compose well, yet many can appreciate a great painting or an inspired composition. To produce a clear and reliable financial statement the specialised skill and training of the accountant are necessary, but those before whom such a statement is placed do not need that skill and training to understand its main implications. If the student has a working knowledge of accounting, well presented financial statements will be plain sailing for him, but even without it he may learn to grasp their implications.

In this chapter and the three that follow accounting considerations loom largely. This must be so, since the issues involved are essentially measurements for administrative purposes, in terms of money, and accounting may be described as the science of financial measurements. The practitioners in this science have evolved a concentrated application of the science which makes it no easy matter for the layman to follow the procedure found most convenient and economical in practice. Except in a few instances there is, further, no strictly standardised system, as each set of accounts must reflect the particular circumstances of the business, apart from the personal preferences of the proprietor (sole trader, firm, or company) for one method over another; but the tendency is towards standards that vary only within narrow limits.

For present purposes of informing the student as to the fundamental issues involved, it has seemed preferable to approach the matter in a "laboratory" fashion, with liberty of action accordingly to elaborate, when found convenient, irrespective of whether the elaboration would or could be justified in actual practice or not. In this way the student can acquire an understanding of the constituent parts of the "compound" he will usually meet with. Some of the constituents exposed in the process have to be described, therefore, in terms not in

common use. In selecting the terms to be used, endeavour has been made to link up as far as may be with the various aspects of administration dealt with in other parts of the book. A case in point is the use of the terms Production Ledger and Distribution Ledger as having reference to the ground respectively covered by the Organisation of Production (see Vol. II) and the Organisation of Distribution (see Vol. II). When the student seeks later to acquire a working knowledge of regular accountancy practice, he is not likely to find any difficulty in adopting the more conventional terms and the concentrated or abbreviated practice he will meet with, and should find himself with a much better understanding as to the significance of the condensed form of the practice in question. He should, in consequence, be the freer to visualise the potentialities in any established system of accounts, should he feel desirous of exploring them, when his responsibilities give him the opportunity.

Although liberty has been taken under the "laboratory" treatment to elaborate occasionally beyond ordinary accountancy requirements, this elaboration has been kept to a minimum; and for the most part there is no divergence from practice that has considerable, if not universal, acceptance. Scrupulous care has been taken not to conflict with sound accountancy principles; but it must be clearly understood that the four chapters under discussion have been written from the point of view of the administrator concerned with the use and purpose of accounts, and not from the view-point of the accountant concerned to keep them in the way found best in actual experience over long years. Not only is this so, but the degree of knowledge of accountancy detail required of the administrator is naturally very much less than that required of the accountant. The student desirous of obtaining a full insight into accountancy practice is referred to *Elementary Book-keeping*⁹ by L. C. Cropper and *Higher Book-keeping and Accounts*,¹⁰ by Cropper, Morris, and Fison. Reference should be made also to *Accounting*,³⁶ by Stanley W. Rowland.

THE BALANCE SHEET *

The most important financial statement regarding any business is the *Balance Sheet*, which is normally prepared after

* See "*Design of Accounts*" on p. 138.

the end of each financial year. For a limited company this must be prepared and audited annually in respect of a date which may be chosen at will; and if a public company, it must be filed at Bush House (or, if registered in Scotland, at Exchequer Chambers, Edinburgh). The choice of date is usually related to seasonal changes in trade, so that the closing of the year's accounts may synchronise with a lull in business activities. In the absence of any seasonal aspects the closing date is likely to be the end of December, though perhaps a more convenient date is the end of March, corresponding with the "Income Tax" year and with the "Rating" half-year. Where out-of-doors stock-taking is necessary, there is an advantage in avoiding the winter months, as it can be done under much more favourable conditions in the summer. It causes unnecessary difficulty with both Purchase and Sales accounts for the books to be closed at any date which is not the end of a month.

The Balance Sheet is intended to convey a truthful statement as to the Company's financial position, and should not conceal any known cause of weakness in that position, or suggest anything which cannot fairly be supported as correct from a business point of view.

The Balance Sheet is so called because it is a classified summary of the ledger balances remaining at a particular date after closing all revenue items into the Profit and Loss Account; all "liability" balances being grouped on one side and all "asset" balances being grouped on the other. An item in a Balance Sheet may represent only one balance (e.g. Appropriation Account Balance), or it may be itself a summary or grouping of balances of a particular kind (e.g. Debtors). In English practice the Liabilities are shown on the left-hand side of the Balance Sheet and the Assets on the right-hand side. Although Liabilities and Assets are convenient and satisfactory short titles, it may help the student to give the longer titles, viz.:

<i>Capital, Liabilities and Reserves.</i>	<i>Assets, Expenditure carried forward and other Debit Balances.</i>
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A specimen Balance Sheet is given overleaf incorporating fictitious figures. See also p. 62.

Assets.—The items appearing in the specimen Balance Sheet need little explanation, but it is important that the

FIG. 3.—SPECIMEN BALANCE SHEET AS AT
Capital, Liabilities, and Reserves.

	£	£
Creditors :		
Trade Accounts	12,800	
Bills Payable	1,900	
Amounts due to Subsidiary Companies	200	
	<u>—</u>	14,900
Unclaimed Dividends		150
Loan from a Director		100
Income Tax Reserve Account		5,000
5% Mortgage Debentures (Secured upon land and buildings)	50,000	
Interest accrued thereon to date	1,250	
	<u>—</u>	51,250
Leasehold Capital Redemption Fund :		
Total per last Balance Sheet	264	
<i>Add : Charges to Profit and Loss Accounts for annual</i>		
Premium	130	
Interest for year to date	7	
	<u>—</u>	401
General Reserve Account :		
Balance per last Balance Sheet	22,000	
Transferred from Appropriation Account	4,000	
	<u>—</u>	26,000
*Appropriation Account, balance at date		17,800
Capital.		
<i>Authorised :</i>		
100,000 6% Cumulative Preference Shares of £1 each	100,000	
100,000 Ordinary Shares of £1 each	100,000	
	<u>—</u>	£200,000
<i>Issued :</i>		
95,000 6% Cumulative Preference Shares of £1 each fully paid	95,000	
75,000 Ordinary Shares of £1 each, fully paid	75,000	
	<u>—</u>	170,000
		<u>£285,601</u>

REPORT OF THE AUDITORS TO THE

We have audited the Balance Sheet of Limited, dated, a. all the information and explanations we have required. In our opinion such Balance Sheet gives a true and correct view of the Company's affairs, according to the best of our information and the explanations given.

..... (Referred to as Current Year.)

Assets, Expenditure Carried Forward, and Other Debit Balances.						
						£
Cash in hand	.	.	.	.	.	200
Bank Balance, Current Account	.	.	.	.	.	4,870
Deposit Account	.	.	.	.	.	30,000
						<u>35,070</u>
Bank Balance, Unclaimed Dividend Account	.	.	.	.	.	150
Debtors, less provision for bad and doubtful debts :						
Trade Accounts	.	.	.	.	.	19,000
Bills Receivable	.	.	.	.	.	900
Amounts due from Subsidiary Companies	.	.	.	.	.	100
						<u>20,000</u>
Loans to Directors	.	.	.	.	.	850
Investments at cost or under	.	.	.	.	.	29,000
Shares in Subsidiary Companies, at cost or under	.	.	.	.	.	5,000
Stocks of Finished Products, Materials, Supplies, Loose Tools and Equipment, and Work-in-Progress, at cost or under	.	.	.	.	.	55,000
Leasehold Capital Redemption Policy :						
Value as per last Balance Sheet	.	.	.	.	.	264
Add : Premium paid since	.	.	.	.	.	130
Interest accrued since	.	.	.	.	.	7
						<u>401</u>
Freehold and Leasehold Land and Buildings :						
As per last Balance Sheet	.	.	.	.	.	£68,700
Additions during year	.	.	.	.	.	650
						<u>69,350</u>
Less Depreciation written off	.	.	.	.	.	1,020
						<u>68,330</u>
Fixtures, Fittings and Office Equipment, as per last Balance Sheet	.	.	.	.	.	8,000
Additions during year	.	.	.	.	.	2,500
						<u>10,500</u>
Less Depreciation written off	.	.	.	.	.	1,500
						<u>9,000</u>
Machinery and Plant :						
As per last Balance Sheet	.	.	.	.	.	35,500
Additions during year	.	.	.	.	.	4,500
						<u>40,000</u>
Less Depreciation written off	.	.	.	.	.	5,000
						<u>35,000</u>
Patterns, Drawings, and Patent Rights :						
As per last Balance Sheet	.	.	.	.	.	8,000
Additions during year	.	.	.	.	.	500
						<u>8,500</u>
Less Depreciation written off	.	.	.	.	.	1,700
						<u>6,800</u>
Goodwill (as originally valued on purchase of business) :						
As per last Balance Sheet	.	.	.	.	.	20,000
Preliminary Expenses (originally £4,000) :						
As per last Balance Sheet	.	.	.	.	.	2,000
Less Amount written off	.	.	.	.	.	1,000
						<u>1,000</u>
						<u>£285,601</u>

MEMBERS OF —— LIMITED

above set forth, with the books and accounts of the Company. We have obtained
Sheet is properly drawn up so as to exhibit a true and correct view of the state of the
given us, and as shown by the books of the Company.

.....
Auditors.

student should appreciate that assets vary in the degree to which they are realisable, as indicated below :

Assets being actual cash, or which can be immediately converted into cash.

Cash in Hand and Balance at Bankers.

Assets which can be realised at comparatively short notice.

Investments in Securities, quoted and freely marketable on the Stock Exchange.

Assets which will take a longer time to realise.

Debtors.

Assets which will take a still longer time to realise.

Freehold and Leasehold Properties.

Doubtful assets which are or may be expected to realise only a certain percentage of their value.

Plant and Machinery. Stock of Materials, Tools and Finished Goods.

Other items which can only be considered to be assets so long as the business is a going concern.

Goodwill. Patents. Work-in-Progress.

Unrealisable items.

Preliminary Expenses. Debit balance (accumulated losses) on Profit and Loss Account.

As to *Debtors*, i.e. debts owing to the Company, these have to be appraised. Those debts known to be completely bad are written off, and the doubtful debts are reduced to their estimated realisable value, before the Balance Sheet is prepared.

Investments in securities, even in "Gilt-edged" or trustee stocks or shares, may have either depreciated or appreciated in market value at the date of the Balance Sheet, compared with their initial cost. Their market value (or stock exchange value, as it may be called) is by no means permanent, and can only be said to be true if the investment is realised, i.e. the stock or shares are sold at the market price in question. The usual practice in the ordinary commercial or industrial undertaking is, therefore, to maintain the book value of investments at their purchase cost, and to make a reserve from profit sufficient to

meet the known or probable fall in market value, if any, but seldom to increase the book value beyond the original purchase cost, as may, for instance, be done by a financial trust operating in investments. The method of valuation is stated in the Balance Sheet.

Something of the same sort occurs with *stock of materials and finished goods*. It is laid down by the accountancy profession, in the exercise of their duty as public auditors, that the book value of stock must never exceed the original cost. If market prices have fallen, or if the stock has become obsolete or surplus, there needs to be a corresponding writing down or writing off of initial cost. This is a very important matter, and it frequently calls for a great deal of moral courage to keep stock valuations at a proper level; for obviously whatever is written off must lessen the margin of profit available for the shareholders. Auditors have always had the right to inspect these valuations and to call for supporting evidence, and are increasingly being expected to exercise their powers in this direction. But auditors are not watch dogs, and are entitled to trust responsible officials where there is no ground for suspicion. It is enough if they exercise reasonable care, and test the valuations by samples here and there, as they think right.

One type of investment, namely, *share-holdings in subsidiary companies*, had been to so large an extent the occasion for over-valuation and deception of investors that the Companies Act, 1929, endeavoured to counteract this evil by requiring certain information relating to share-holdings in and dealings with subsidiaries to be disclosed either by means of entries on the Balance Sheet or of statements annexed to it. These requirements have been much extended by the 1948 Act and, in particular, by Sections 150-153 and the 8th Schedule. Where a company has subsidiaries (*i.e.* is a "holding company") it is required to lay group accounts before the company in general meeting in addition to its own balance sheet and profit and loss account. Group accounts may take the form of a consolidated balance sheet and consolidated profit and loss account, or they may be in some other form approved by the directors. In any event, they must give a true and fair view of the state of affairs and the profit and loss of the company and its subsidiaries so far as

concerns the members of the holding company. In certain circumstances a holding company may be exempt from the necessity of preparing group accounts (Section 150 (2)), but, even so, its directors must cause to be annexed to the balance sheet a statement giving information with regard to the profits and losses of its subsidiaries as required by Paragraph 15 (4) of the 8th Schedule. Moreover, any holding company must set out separately in its balance sheet the aggregate amount of assets consisting of shares in or amounts owing from the company's subsidiaries, distinguishing shares from indebtedness, and must also set out the total of its indebtedness to its subsidiaries separately from its other liabilities (8th Schedule, Paragraph 15 (2)).

Preliminary Expenses are those involved in forming a company, and cover stamp duty, issue and advertising of prospectus, etc. (the latter often a very heavy charge), underwriting, and various professional and allied charges incidental to promoting and registering a company and raising the necessary capital. If the expense cannot be written off at once, whatever balance is not written off must be carried forward from the accounts of the year in which it was incurred over succeeding years' accounts; and the Companies Act prescribes that it must appear as 'Preliminary Expenses' until it has been written off out of profits. Legitimate as it may be to spread an expense of this kind over the early years of a Company's existence, at no time has it any intrinsic asset value—unless, perhaps, for amalgamation or reconstruction purposes.

Liabilities.—The statement as to *Authorised Capital* is a memorandum entry. Stamp duty must have been paid on the full amount of capital authorised, and this authorisation represents the full extent to which shares may be issued and capital be raised by the Directors without seeking new powers or the consent of existing shareholders. If the authorised capital has not been fully issued, new capital can be raised, if wanted, by issuing the balance. Whether the shares so offered will be taken up depends on the company's financial position, as also will the price at which they are offered. Shares may not be issued at a discount (that is, below their nominal value) except in certain circumstances and by leave of the Court.

The particulars of *Capital Issued* represent the proprietary rights of the shareholders in respect to the "equity" or surplus

assets of the business, and to a proportion of the profits. The equity is the cash balance available on liquidation after all assets have been realised and all liabilities met. The shareholdings represent literally the share in this equity value and not a loan. When shares issued are partly paid up, the holder is liable to be called on to pay the balance due.

Holders of Preference Shares, when there are such, usually have the right in a winding up to be repaid to the full nominal amount of their shares before the Ordinary shareholders divide up the equity which then remains. A Preference shareholder has a defined dividend right, having priority over an Ordinary shareholder, but less risk of losing his capital. The Ordinary shareholder takes the risk of receiving nothing when the Preference shareholders have been paid their due, but alternatively, if the business is successful, has the chance of receiving larger dividends and, on liquidation, a refund of capital in excess of his original investment. The variations between classes of share capital and the rights of holders are surprisingly numerous.

A *debenture* is a document given as evidence of the hypothecation or charging of assets, either particular assets or of the whole business or both—usually in return for a loan. The terms of the charge on assets have to be filed at Bush House and noted on the Balance Sheet. Often a debenture is a long-term loan, particularly in large undertakings, and may only be called in in accordance with the conditions of the Debenture deed, as, for example, failure to pay the interest agreed on, or on the liquidation of the business. If debentures are called in, the holders, subject to any prior mortgage on the property charged, have the first claim and the right to be paid in full, however little may be left for other creditors. See also p. 69.

“A mortgage is a conditional transfer of property made by a borrower to secure the repayment of a sum of money at a fixed date, together, usually, with interest thereon. In other words, it is security given by a borrower of money to the lender to cover a loan.”¹⁰

Debentures may constitute a floating charge or a fixed charge on a Company's assets. A floating charge is one given on the undertaking as a whole, where the assets remain under the control of the Company's directors, and can be dealt with as the exigencies of the business dictate. A fixed charge would

arise if the Company's property, or a specific part of it, were vested by a trust deed in trustees for the debenture-holders. Unless provision is made in the trust deed, there can be no dealings in assets subject to a fixed charge.

Where debentures are taken up by the public, debenture trustees are appointed to act for the debenture-holders as a body, and to distribute any repayments according to individual rights. Debentures which give a fixed charge are frequently termed "mortgage debentures."

A loan, such as may be provided by a bank on the security of a single simple debenture, differs from an issue of either long-term or perpetual debentures, referred to above, in that it may be called in at the discretion of the lender on giving the notice agreed. It may be an easier way of borrowing money for the purpose of the business than getting long-term debentures taken up, but carries with it the risk of comparatively sudden demand for repayment, or foreclosure when the lender becomes dissatisfied with his security or desires to make other arrangements.

Under the Companies Act, 1948, particulars must be given under a separate heading in the Balance Sheet of any liability that is secured on assets of the Company. Sometimes creditors who have supplied material find it advisable to secure themselves by a mortgage or charge of some kind. They might, for instance, arrange to have a second charge after the first debenture-holders in the event of liquidation had been paid in full. A creditor having a second charge would also have the right to be paid in full, so far as the balance of cash remaining permitted. Obviously this would lessen the chances of unsecured creditors being paid. The claims of holders of debentures secured by a floating charge rank in a winding-up after certain preferential claims have been satisfied, *e.g.* rates, assessed taxes, wages, etc.

Reserves.—The essential feature of reserves is that a portion of profits (whether arising out of trading or out of sale or revaluation of assets) is retained in the business instead of being distributed as dividend or otherwise. A reserve account is in the nature of a book-keeping device to earmark the profit so allocated as not being available for dividend. It reflects a considered decision of the Directors that the contingencies of the business require this precaution. The decision may be

reached on general grounds or in respect of a particular object.

When amounts are placed to a reserve account in this way, the balance of the account appears on the Liabilities side of the Balance Sheet. Without being a liability in the ordinary sense, it must be represented on the other side of the Balance Sheet in the form of cash or specific investments, or perhaps dispersed over various kinds of assets. If there are specific investments to correspond with a reserve account, these will constitute a reserve fund. It is desirable that a fund, the better to justify the name, should be secured in some way so as to be independent of the vicissitudes of the business, and this may be done by investment in securities outside the business or by deposit with a bank. The fund even then is safeguarded only to the extent that those to whom it is entrusted can be depended on to produce the cash equivalent when called on. Investment of reserve moneys in additional plant for use in the business is a course which may sometimes be justified, but the value of the plant so purchased can hardly be called a fund, as it could only be realised, *i.e.* turned into cash, with difficulty. Investments represented by outside assets, and readily realisable, would constitute a reserve fund in name and fact. A reserve for a special temporary purpose, such as Reserve for Income Tax, may be no more than the recognition of a liability, that should be kept separate from other creditors.

Sometimes secret reserves are created by the writing down to a quite unnecessary extent of assets of one kind or another. This means, in effect, that the assets in question are under-valued, and may be expected to realise on disposal more than their book value. The Management only may be aware of this position, as the Balance Sheet would have brought into account only the profits left after this special writing-down had been done. Nevertheless, the Company would have to pay Income Tax on the real profit made, which is generally assessed on a computation specially made for the purpose. This happens, for instance, when the depreciation written off exceeds the rates allowed for wear and tear by the Income Tax authorities (Inland Revenue) as a deduction from assessable profit.

The financial contingencies and risks of business operation are so many and can be so serious in amount that in the best interests alike of shareholders and employees it is better to err,

if at all, on the side of prudence, in retaining surplus profits in the business, whether as hidden or open reserves. Secret reserves arising from past provision out of revenue for expenditure which has never become necessary can be utilised to maintain a dividend when the year's actual operations may have produced insufficient profit for this purpose—in which case full disclosure should be made in the published accounts. Frequently reserves already disclosed are openly drawn on to provide a dividend, or there may be a Reserve for the equalisation of Dividends to which resort can be made. A reduction of the Reserve Account means that corresponding assets can be released legitimately and, for the purpose of a dividend, the liquid or cash assets would have to be used. To this end investments may have to be sold.

The amount of profits that is carried forward from one year's account to the next is a reserve in effect and may be called a floating reserve. For instance, if the profit "brought in" from the previous year is more than the profit carried forward, then appropriation of profits has been in excess of the current year's profit and has been made possible only by drawing on the "floating reserve"—or there may have been a loss which has been met out of the "floating reserve"; that is, at the expense of the "carry-forward." See also p. 62.

If the concern has been consistently unsuccessful and has made losses instead of profits, the balance of loss at the date of the Balance Sheet will appear on the Assets side thereof under some such heading as "Profit and Loss Account, loss to date." The entry represents the extent to which the assets have become deficient to meet the liabilities, and does not represent any value.

PROFIT AND LOSS ACCOUNT

As already pointed out, the Balance Sheet deals with the financial position as a whole at the particular date when it is drawn up, and is not a statement of the profits or losses that have accrued between the date of one Balance Sheet and the date of its immediate predecessor. The Balance Sheet will reflect by the changes in its items of liabilities and assets the consequences of the trading between the two dates.

The Profit and Loss Account can serve of itself to aggregate all the balances on the trading income and expenditure accounts

concerned, to the end of showing whether a net profit or loss has resulted, so that only the net figure will appear in the Balance Sheet. Probably the most common practice is to draw up both a Trading Account and a Profit and Loss Account. The Trading Account in that case shows the figures relating to the buying and/or manufacturing on the one hand and the selling on the other, including wages, and the stocks at the beginning and end of the period respectively; the balance of the Account shows the gross profit obtained in the period. The gross profit is carried to the Profit and Loss Account, in which is included all income and expenditure not entered in the Trading Account, and the resulting net figure of profit or loss is then entered in the Balance Sheet either on the Liabilities or Assets side as the case may require, unless it is transferred to Appropriation Account.

For an industrial enterprise the Profit and Loss Account can with great advantage—particularly for purposes of present discussion—be divided into four parts, viz. :

'Production'	Profit and Loss Account
'Distribution'	" " "
'General'	" " "
'Final'	" " "

There is room for discretion as to what items should be held to belong to the General Profit and Loss Account instead of being apportioned to Production or Distribution; but the principle of presenting separate Profit and Loss Accounts according to the main division of management responsibility is of first importance. By dissection on these lines the foundation is laid for budgetary control. See p. 180.

Illustrations are given below of the four types of Profit and Loss Account indicated—the figures used being, of course, fictitious and not reflecting any actual experience, but linking up with the specimen Balance Sheet given earlier.

It will be noted that the sales turnover has been apportioned among the four accounts. The percentages adopted are not to be read, however, as having any particular significance. The important matter is that percentages should be arrived at that represent the apportionment of the Sales turnover, found by experience to be appropriate for a given business. This

FIG. 4.—*Specimen Profit and Loss Accounts*

PRODUCTION PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED

<i>Expenditure made and incurred.</i>		<i>Income received and accrued.</i>
Values brought forward from last Account:		£
Work in Progress	17,500	65% of Sales Turnover (£429,000)
Unsold Finished Product	1,500	Scrap sold, but not credited to individual Production Orders
Production Expenditure during period:		450
Prime Cost Materials	114,750	Values carried forward to next Account:
Labour	137,150	Work in Progress
Production Expenses (other than Depreciation):		15,000
Building Service	550	Unsold Finished Product
Power Service	3,000	2,000
Producing Unit Service	4,500	
Tools Service	2,500	
Material Service	1,450	
Departmental Service	1,150	
Works Administration Service	3,500	
Works Contingencies Service	950	
Depreciation written off:		
Buildings	750	
Machinery and Plant	5,000	
Patterns, Drawings, and Patent Rights	1,700	
	<u>295,950</u>	
Balance carried to Final Profit and Loss Account	<u>350</u>	
	<u>£296,300</u>	<u>£296,300</u>

DISTRIBUTION PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED

<i>Expenditure made and incurred.</i>		<i>Income received and accrued.</i>
Sales Office Salaries and Wages	9,375	£
Salesmen's Salaries and Expenses	21,450	27½% of Sales Turnover (£429,000)
Agents' Commission and Expenses	16,200	117,975
Sales Promotion, Printing and Stationery	5,975	
Advertising	47,525	
Show and Demonstration Expenses, including Samples	6,000	
Tendering Expenses	1,590	
Warehouse and Delivery Expenses	2,410	
Bad Debts	1,600	
Sales Office Expenses:		
Rent, Rates, and Insurance	900	
Heating, Lighting, and Cleaning	300	
Office Equipment Repairs	250	
Postages, Telephone, and Sundries	3,050	
Depreciation written off:		
Buildings	170	
Fixtures, Fittings, and Office Equipment	1,000	
Leasehold Capital Redemption Fund Account: proportion of annual premium	80	
	<u>117,875</u>	
Balance, carried to Final Profit and Loss Account	<u>100</u>	
	<u>£117,975</u>	<u>£117,975</u>

* The value of Unsold Finished Product (at cost or under) and included in this account to permit of a simple illustration. In practice, the same net effect is achieved in another way.

GENERAL PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED

<i>Expenditure made and incurred.</i>	£	<i>Income received and accrued.</i>	£
General Office Expenses :		2½% of Sales Turnover (£429,000)	10,725
Rent, Rates, and Insurance	490		
Heating, Lighting, and Cleaning	200		
Office Equipment Repairs	75		
Salaries and Wages	5,955		
Stationery and Office Supplies	425		
Postages, Telephone, and Sundries	1,000		
Depreciation written off :			
Buildings	100		
Fixtures, Fittings, and Office Equipment	500		
General Travelling Expenses	230		
Directors' Fees	1,000		
Legal Expenses and Accountancy	450		
Leasehold Capital Redemption Fund Account : proportion of annual premium	50		
	10,475		
Balance, carried to Final Profit and Loss Account	250		
	£10,725		£10,725

FINAL PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED

<i>Expenditure made and incurred.</i>	£	<i>Income received and accrued.</i>	£
Debenture Trustees' Fees	150	5% of Sales Turnover (£429,000)	21,450
Bank Charges and Interest	100	Interest on Investments	1,800
Debenture Interest	2,500	Balances from	
Cash Discounts allowed	1,000	Production Profit and Loss Account	350
	3,750	Distribution Profit and Loss Account	100
Balance, carried to Appropriation Account	21,500	General Profit and Loss Account	250
	£25,250	Cash Discounts received	1,300
			£25,250

method is known as the "Sales Pound" method, and may be represented diagrammatically as follows :

Elements of Sales Pound.	Corresponding Sectional Profit and Loss Accounts.
<i>Total Production Costs</i>	<i>Production Profit and Loss Account</i>
<i>Distribution Oncosts</i>	<i>Distribution Profit and Loss Account</i>
<i>General Oncosts</i>	<i>General Profit and Loss Account</i>
<i>Financial Margin</i>	<i>Final Profit and Loss Account</i>

FIG. 5.

The items entering into the various sections, apart from the particulars shown in the respective Profit and Loss Accounts, are considered at more length in Chapters VII and VIII.

In working out the specimen Profit and Loss Accounts, it has been assumed that each of the three sections (Production,

Distribution, and General) should be operated within a quota, upon which no large profit is expected. Such profits, or losses, as are made are transferred to the Final Profit and Loss Account (in the form adopted here). It is supposed that the apportionment of the sales turnover to this account will meet all financial charges and leave a profit balance large enough to pay dividends. The cash discounts given on sales, and the discounts received on purchases are included in this account; although there is a case for treating the former as an item of distribution costs, and the latter as a reduction of purchase costs. Similarly there is a case for the Production, Distribution, and General Accounts bearing a charge for interest on capital employed. It would, however, needlessly complicate matters for the student to discuss these aspects any further at this stage.

Modern accountancy practice favours an Appropriation Account in which the disposition of profit is shown by itself. This serves as a link between the Final Profit and Loss Account and the Balance Sheet, relieves the latter accordingly of certain detail, and correspondingly assists its interpretation. The Appropriation Account (Fig. 6), when used, must be an annex of the Balance Sheet and must be published.

APPROPRIATION ACCOUNT FOR THE
YEAR ENDED

<i>Expenses and Reserves.</i>	£	<i>Receipts, less Dividends.</i>	£
Amount carried to Income Tax Reserve Account . . .	5,000	Balance brought forward from last Account . .	19,500
Amount carried to General Reserve Account . . .	4,000	<i>Less :</i> Dividends declared on Issued Capital, viz. :	
Amount written off balance of Preliminary Expenses . . .	1,000	6% on Preference Shares . .	5,700
Balance, carried forward . . .	17,800	10% on Ordinary Shares . .	7,500
			13,200
			6,300
		Net Profit for year brought from Final Profit and Loss Account . .	21,500
	<u>£27,800</u>		<u>£27,800</u>

FIG. 6.

Practice varies as to the publication of a Profit and Loss Account; and, when it is done, only a very condensed account is shown, with no disclosure of sales turnover or of any other information which the proprietors of the business wish to keep from possible competitors. Very little of the expenditure is itemised; but under the Companies Act, 1948, it is obligatory to show in the Profit and Loss Account the remuneration, both general and special, paid to Directors, as well as to show in the Balance Sheet any loans to Directors and other officers of the company.

DEPRECIATION *

Depreciation, as a financial measure, has been variously defined, but the definition adopted by Gill and Cook,³¹ which is twofold in character, is perhaps most useful. For "Plant," may be read any asset.

- (1) Provision for the diminution in value of plant in place and working (*i.e.* its loss in value to the owner as a continuing plant) by reason of causes *outside* his control, such as age, wear, and accidents.
- (2) Provision to enable the owner to take plant out of commission before its physical life is exhausted in cases where, from either progress of the art or growth of the business, it is economically advisable to do so—that is, by reason of causes *within* his control.

Another writer, P. D. Leake,³³ has suggested that "expired capital outlay" is the correct term to apply to the first part of the above definition. The second part of the definition has reference to what is usually termed "obsolescence." This connotes the conclusion of efficient life, otherwise than by wear and tear, and its determination is obviously a matter of technical judgment that may vary from time to time in the light of technical progress.

* See p. 202.

The rate of depreciation is more usually based on the physical life of the plant, that is, the period during which the plant would continue to perform satisfactorily the service to which it is adapted, if allowed to do so, but subject to all causes outside the control of the owner, such as wear and tear and accidents.

The amount of depreciation to be provided is the difference between the original cost and the assumed residual value as scrap after allowing for the cost of removal and disposal. The residual value at the end of the efficient life may, however, be more than scrap value if the discarded plant should have a second-hand value to a new owner.

It is convenient to compute depreciation rates on the assumed physical life ; and, if the plant be discarded earlier, to treat the "book value" in excess of the then actual value, as extra depreciation to be written off at the time the decision to discard is reached.

The "book value" at any time is the assumed asset value at that time, having regard to the depreciation provided to date. If the rate of depreciation has been correctly determined the book value at any time will be the "*then*" value as it would be confirmed by expert valuation. By the nature of things rates of depreciation can be, at the best, approximations only ; and the financial policy of any owner should be directed to making the rate sufficiently high to ensure that book values shall work out from year to year below, rather than above, the proper "*then*" value. Such a policy encourages the discarding of plant as soon as possible after it ceases to be the most efficient for the purpose.

The comparatively low rates of depreciation allowed under the description "Wear and Tear Allowances" as chargeable expenses by the Income Tax authorities have created a tendency for too little depreciation to be written off, because any additional writing off is treated for Income Tax purposes as profit upon which tax must be paid.

Where, however, plant is replaced the Income Tax authorities make special allowances necessary to reduce the "book value" of the discarded plant to the value realised for it. These allowances are, of course, tax allowances only and do not save the owner from having to bear the cost of writing down the

book value to the realisable value in one year's Accounts. A higher scale of Wear and Tear Allowances would encourage the necessary writing-down to be anticipated and therefore spread over a number of years.

With residual values taken as scrap value, there is little room for error in the total depreciation to be provided. The

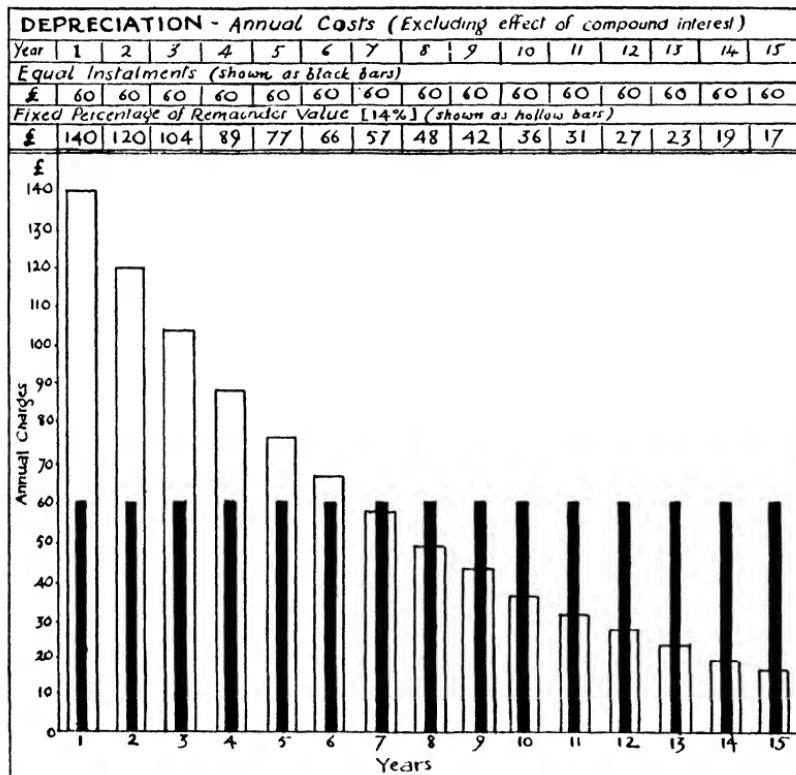


FIG. 7.

main field of error in depreciation rates is in the estimate of the physical life, for the correct annual charge can only be determined by assessing the correct number of years in which the sum-total required has to be provided.

There are two principal methods of computing the depreciation rate.

The method that is simplest to describe is that of equal instalments, the annual charge or rate being computed by

dividing the total depreciation from first to last on each asset by the number of years over which it is to be spread. This method is commonly known as the *Straight Line* method, from the form of graph showing annual decline in book values. It has been widely adopted in the U.S.A.

The second method involves a variable charge—at its maximum in the first year and falling to a minimum in the last year. The rate is computed as a *fixed percentage on remainder values*. For example a 5 per cent. depreciation would be applied the first year on £100 and the second year on £95 (£100 less 5 per cent.), and so on. It is very convenient in practice, as the agreed percentage can be applied at one calculation to the whole of the book value of any group of plant for which a common percentage is appropriate. It is the predominant method in British practice.

The results of the two methods are illustrated in Fig. 7. It will be noted that under the second method the annual depreciation costs are heaviest to begin with, and are very much reduced in the later years.* The percentage of 14 per cent. that appears in the table was the result of applying the same data as was used to illustrate the first method.

In Fig. 8, the fall in book values, year by year, is shown applied to the same data as in the preceding chart.

Both the methods described above leave out of account the consideration that in providing for depreciation a sum of money is in effect retained which should earn interest. The sum may be actually invested in funds outside the concern, or, as is more usual, applied to the purchase of new plant.

* “The general adoption by commercial companies of the principle of providing more heavily for depreciation in the early years may perhaps be traced largely to the following considerations :

- “ (1) Uncertainty in regard to the economic life of manufacturing plant.
- “ (2) Anticipated increase in running repair charges during the later years of life. In effect the attitude taken up by commercial companies as a whole towards the question of depreciation is influenced more by policy than by a scientific assessment of the different elements of risk; the continuity of each company's business is of such vital importance to the shareholders concerned that it has been thought desirable to adopt methods of dealing with depreciation which reduce to a minimum the risk of loss arising from the early obsolescence of plant.” (Sir William Plender (later Lord Plender), in discussion on Gill and Cook's paper.)³¹

The recognition of interest accruing on the depreciation funds as set aside means that a reduced annual charge will accomplish the intended purpose or, conversely, that the equal instalment (straight line) and percentage-on-remainder value methods both involve a higher charge than is necessary or

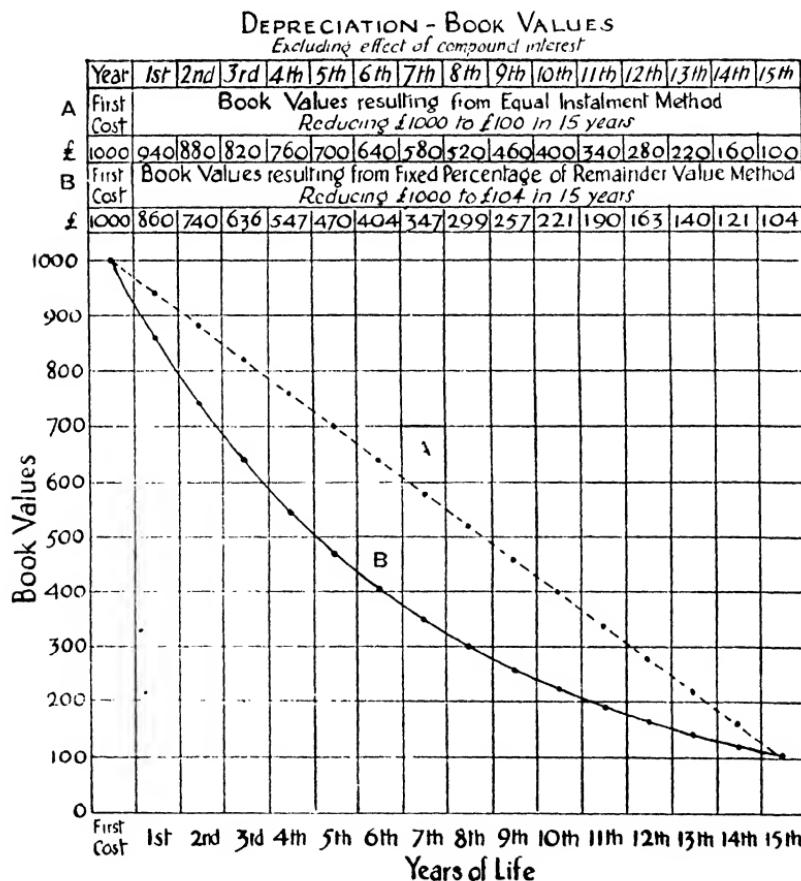


FIG. 8.

apparent. When, however, it is remembered that the tendency is always to over-estimate the physical life—that is, to spread the necessary depreciation over too many years—the additional depreciation provided by the interest on the sum set aside is not likely, in the ordinary way, to make the total depreciation excessive before obsolescence occurs.

The recognition of the effect of interest is discussed at more length in Chapter VIII * under "Engineering Economics."

Depreciation Rates.

Fixed Assets.—1. Machinery and Plant: (a) an initial allowance of 20 per cent. of capital expenditure incurred since 6th April, 1944, (b) on the annually decreasing written down or remainder value, allowances at rates varying from 3 to 12 per cent., approximately, for normal usage of the usual types: in a few instances, as *e.g.* special plant or machinery used most exceptionally, 20 per cent. may be allowed.

2. Industrial Buildings and Structures: (a) an initial allowance of 10 per cent. where the capital expenditure was incurred on or after 6th April, 1944, (b) an allowance of 2 per cent. on the annually decreasing written down or remainder value—the Balfour Committee²¹ recommended $2\frac{1}{2}$ per cent.

It is of interest to note the "life" which these rates assume before the asset in question is written down to 5 per cent. of the original cost (taken as a rough equivalent of ultimate scrap value): namely—

3% on Remainder Value	...	98.5 years, app.
6% " "	...	48.5 " "
9% " "	...	31.7 " "
12% " "	...	23.4 " "

Premises which are Leasehold, and therefore have to be handed over at the end of the lease to the lessor in substantially their original condition, set up a liability which is best met by a suitable reserve known as an amortisation account. A Redemption Policy, referred to below,† is particularly appropriate for meeting this situation.

It is not usual to depreciate land valuations, though that is not to say that land can always be re-sold for as much as it cost. The buildings on it may themselves be a detriment, or the district may decline. Ordinarily, however, land tends to appreciate in value, and in any case is hardly subject to wear and tear. Mineral rights under the surface raise issues which need not be considered here.

* See p. 202.

† See p. 204

VALUATION

Fixed Assets.*—The value of any property to a purchaser is usually determined by the law of supply and demand; but in the main the controlling factor, in the case of industrial property, is likely to be its estimated earning power. This must depend on trading prospects, taken in conjunction with past profits as disclosed by the financial statements already referred to. There can be no definite formula for arriving at a valuation in any given case; and for industrial property, considered as a complete working unit, there is rarely a current market value, such as obtains more or less with house property; though the individual items of land, buildings, plant and machinery may lend themselves better to this criterion.

Although a sale of its property and equipment may not be contemplated when a business starts operating, the accounts and records should be so devised and kept from the beginning as to facilitate the establishment of an itemised valuation of all property and equipment. This will confer other advantages: to enable rateable values as assessed by local authorities to be contested if need be, and to enable fire and damage claims to be established against an insurance company so far as fire and damage may have been covered.

The itemised records of fixed assets can extend with advantage sometimes to the following particulars:

Date of Installation.

Plant Identification No. and Location.

Specification and main dimensions.

Identification with purchase order and invoice (or making order and cost account). Cost of Installation.

Replacement or Reinstatement value for fire insurance purposes.

Particulars and cost of alterations and additions, and major repairs.

Estimated efficient life—reviewed, say, every five years.

Depreciation rate recommended. Depreciation rate adopted.

Hours idle each month.

It is, however, seldom considered worth while going to as much trouble as the above schedule would suggest, but with certain

* See p. 201.

types of plant the information, in part or whole, may be invaluable and may cost little to summarise in one record.

A useful measure of fixed assets values in a given industry is the ratio * of the total to sales turnover; thus, if the book value of Land, Buildings, Plant and Machinery was £50,000, and the sales turnover was £125,000, the ratio would be as 1 : 2·5. The difficulty with such "fixed assets" ratios, as they may be called, is that they are only useful as a basis of comparison under strictly comparable conditions. When a company has more than one factory of the same kind, comparison on these lines can be made more safely. There is nothing, however, to hinder the use of a fixed asset ratio, as a factory expands, to test whether the enlarged plant continues to be as productive, proportionately to its book value, as before. This might lead to a clearer idea of how rapidly the new plant should be written down if the concern is to retain its old competitive power with its larger plant. If, however, enough profits cannot be earned to permit this rate of writing down, then the increase in fixed assets will hardly have justified itself.

While no invariable basis can be submitted to guide valuation of fixed assets, certain rules can be suggested :

That the classification of values (and therefore of initial expenditure) should be such that all the items included in any one class may be reasonably assumed to have a common length of life if kept in proper repair. This involves that competent technical advice should be taken to ensure accuracy.

That such annual rates of depreciation should be adopted for each classification as will bring the book value down to scrap value within the estimated life.

That, concurrently with the foregoing rules, the classification shall also distinguish between plant and machinery that is subject to assessment for rating purposes (see note below), and plant and machinery directly used for production purposes or for the upkeep of the same.

Valuation for Rating.—In regard to the last point the Rating and Valuation Act, 1948, drew a distinction between machinery and plant for power, heating and lighting, etc.

* See p. 201.

(which are to be included in the assessment for rates), and machinery (including Machine Tools), and plant used for manufacturing and trade processes, which are not to be included in the assessment, unless (like gasholders or blast furnaces) they are of the nature of a building or structure. A schedule known as the Plant and Machinery (Valuation for Rating) Order, 1927, has been issued giving full details of the machinery and plant liable to assessment.

The rateable value is in Scotland the rental value, and in England there is a relationship to rental value, though not laid down by law. As to the method of arriving at rental value, E. Witton Booth¹ says :

“ There are a number of factors which govern the rise and fall of rental value ; thus of general application there is demand and supply ; of specific application there is locality, and the situation, age, size, convenience, construction and character of the premises themselves. It is the operation of these influences acting together which is rounded up in the term ‘ the higgling of the market.’ ” He speaks also of the comparative method under which the rental value in the open market is drawn from a comparison of the rents being actually paid for similar premises. Alternatively, when this is impossible the structural method must be resorted to and a percentage on the capital outlay adopted as the rental value.

Standard Loose Plant.—Although loose plant depreciates even more than fixed assets, the problem is different in that during the course of any financial year many items brought into account at the beginning of the year will have been discarded as worn out or have been lost by the end of the year.

The safest method is, therefore, one of valuation, that is, to take stock each year-end and value each item on its merits. This is apt to be very tedious and expensive unless a compromise is made. A convenient compromise, used by the late E. T. Elbourne,¹³ is to value all items in stock at any time at replacement cost, and to make a flat percentage deduction from the total replacement value to bring all items to a fair average value—on the assumption that all loose plant in service is sound and usable, and that definitely new items, immediately they have been used, have only a second-hand value. Some classes of loose plant can, on this basis, be reasonably valued at two-

thirds, and others at one-half, the replacement value. A few items such as motor vehicles, which are a species of loose plant and could become missing, will require individual valuation by process of depreciation—the Income Tax Allowance being now 25 per cent. of the remainder value, requiring 8 years to bring the initial book value down to 10 per cent., and 10·5 years to bring it to 5 per cent.

Special Tools, including in the term Patterns and the like. These should preferably be written off at once, and only in very exceptional circumstances carried in stock at any value. Even in the latter event this should be no more than an expedient for spreading the cost over several years (but not, of course exceeding the expected life of the tools)—that is, the book values would be written down either to nil or to a nominal figure by suitable instalments within the period decided upon.

Materials.—The valuation of materials is one of the purposes of an annual stocktaking. A choice of basis is available, viz. :

- (1) Average purchase price during a preceding period of, say, three or more months.
- (2) Actual purchase price of the consignments in stock, if distinguishable.
- (3) Market price at time of stocktaking.
- (4) Probable market price at the time when the material is likely to be used.

Ordinarily method (1) or (2) is used for materials held in relatively small quantities, and method (3) or (4) for staple materials, that is, materials used in relatively large quantities, in the particular business. The choice of alternative should be to use whichever is the lower, provided that no stock is written up or valued in excess of the original cost.

When valuation has been carried through on these lines, there will remain a question of stock that will probably not be used at all, or is considerably in excess of what is likely to be used. Such items should be starred in the stock list, and a suitable deduction or reservation made from the total stock valuation to cover the risk of obsolescence. The more common practice, however, is to "mark down" the individual doubtful items to their estimated ultimate worth. The advantage of the former method is that if and when items of doubtful stock come

to be used, they can be charged for that purpose to the order or account concerned at their real value which may be the original cost.

Work-in-Progress.*—Broadly speaking, the basis of valuation of work-in-progress should be the cost of manufacture to date; but it sometimes happens that these costs are excessive, and consequently a lower value ought to be adopted. The danger is particularly real on special contracts that are uncompleted at the end of a financial year. Very careful scrutiny is therefore necessary to see that the expenditure to date corresponds proportionately with the estimate. Alternatively, it must be discovered whether the further expenditure necessary for completion, added to the expenditure to date, will exceed the total estimate. With standardised products there should be a standard production cost, to control the work-in-progress valuation—in effect the valuation must not exceed what the work in question is worth in terms of this production cost.

Finished Product.†—As with work-in-progress, the valuation of finished product must not exceed what the product is worth, delivered to the warehouse ready for sale. Where standard production costs have been established, they determine the maximum permissible valuation, irrespective of the recorded costs of production. In the absence of a standard production cost, carefully worked out, a safe approximation can be arrived at by making a deduction from the selling price sufficient to cover all expenses beyond the production stage and the profit margin. It is financially unsound to include anything more than production costs in the valuation of finished product.

The percentage deducted for distribution and general charges and profit should, of course, be varied for different classes of finished product where experience indicates a difference in the proportion of those expenses. For instance, products made for stock, although manufactured more cheaply per unit, may cost either more or less to dispose of in terms of percentage of selling price than goods made to a customer's order, either by reason of the cost of obtaining the sales order, or of warehousing risks and expenses, or of other factors.

Individual items of bad and doubtful finished product, such as a surplus over expected demand, should be marked down

* See p. 197.

† See p. 199.

permanently to the estimated realisable price less a margin to cover the cost of finding a buyer and any other incidental expenses.

DESIGN OF ACCOUNTS

Students who wish to obtain additional knowledge of this important subject will find a full and interesting treatment, with many examples and a valuable discussion of accounting ratios, in *Design of Accounts*⁵ by F. Sewell Bray, F.C.A., F.S.A.A., and H. Basil Sheasby, A.C.A., A.S.A.A., published for the Incorporated Accountants' Research Committee by Humphrey Milford at the Oxford University Press.

CHAPTER VI

PRINCIPLES OF INDUSTRIAL ACCOUNTING

In dealing with Financial Statements it was found possible to discuss the Balance Sheet and Profit and Loss Account with little or no reference to the books of account necessary to their preparation. In proceeding, however, to discuss Industrial Accounting, some explanation must be attempted of the book-keeping structure through which these accounts take shape. The method of explanation does not follow the orthodox course of building up a system on the basis of the primary entries of financial transactions. What is done is to work back from the final accounts just as far as may be required for present purposes. This approach involves not only a selective treatment, but means taking certain small liberties with accountancy terminology. Nothing is stated that in principle conflicts with sound accountancy practice; but it is important for the student to be clear that the explanations which follow are not offered as instructions in the technique of book-keeping. This point of view was explained at the beginning of the previous chapter.

SCHEME OF ACCOUNTS

The diagram, Fig. 9, will serve to focus the particular accounting structure which has been devised to assist present discussion. On the other hand, it must not be interpreted as comprising all the elements (or accounts) necessary to the operation of such a scheme. An instance of this is the necessity for a Sales Turnover Account for apportionment of the sales turnover to the respective Profit and Loss Accounts, as set out in the preceding chapter.

In any accounting system the method by which any item, or part of an item, may be transferred from one account to another is as rigidly regulated as the transfer of a locomotive (under its own power) from one set of rails to another. No attempt is made in this book to explain this technique, as this is quite clearly outside its scope.

Although the older terms of " ledger " and " book " are used, and may suggest the older form of bound book, these terms are to be interpreted as applying equally to any appropriate collection of sheets (possibly held in loose-leaf binders) or cards (possibly held in trays and/or cabinets), which function as a ledger or other book of account.

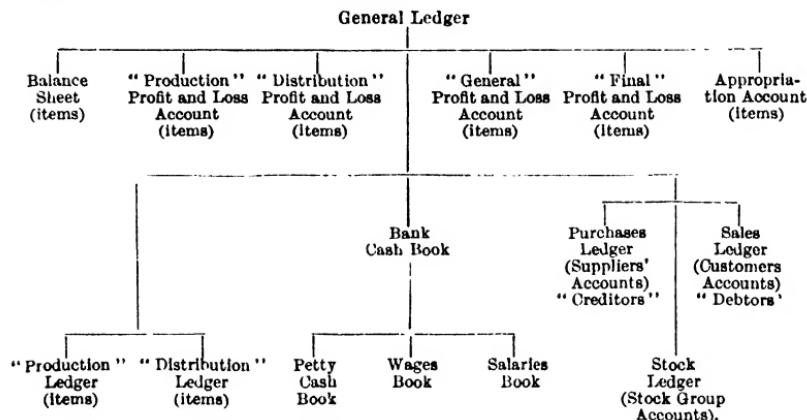


FIG. 9.—Diagram of Scheme of Accounts.

General Ledger.—It tends to simplify the present description to include in the term General Ledger both the Private Ledger and the Impersonal Ledger. The Private Ledger may contain accounts such as :

Capital,	Bonuses,
Reserves,	Loans,
Assets,	Directors' Fees,
Depreciation,	Profit and Loss Accounts.

The Impersonal Ledger, on the other hand, contains such accounts as

Sales Control,	Stock Control.
Purchases Control,	

There is nothing to prevent the Private Ledger and the Impersonal Ledger forming one, two or even more ledgers. Any ledger is simply an aggregation of personal or other accounts grouped together conveniently for posting purposes, for balancing (which, briefly, means proving accuracy), or, in the case of the Private Ledger, for keeping certain information as far as possible confidential.

The Sales Accounts with individual customers and the Purchases Accounts with individual suppliers are kept, for convenience, in sectional personal ledgers, because the accounts are with persons. They are known, respectively, as Sales Ledger, and Purchases or Bought Ledger. These are essentially sectional ledgers which it is convenient to keep quite separate from the General Ledger and are discussed again later.

Control Accounts.—In the General Ledger there will be control accounts for Sales and for Purchases. In these accounts there will be entries of the total sales and total purchases month by month. There will also be monthly entries of the total cash received from customers, with discounts or other credits allowed, and similarly, of total cash paid to suppliers with discounts or other credits received. The tendency of modern practice, particularly with mechanical accounting, is to have daily entries and daily agreement. In this way the respective control accounts will show the total balance owing by "Debtors" and the total balance owing to "Creditors"; and the control accounts thus formed serve a useful purpose in providing a check on the accuracy of the Sales and Purchase Ledgers. These transactions are indicated in the following tabulations.

SALES CONTROL ACCOUNT

(General Ledger)

"Debtors" at beginning of period, brought forward		Cash received	- - - - -
Sales as invoiced	- - - - -	Cash Discounts given	- - - - -
		Allowances	- - - - -
		Bad and Doubtful Debts written off	- - - - -
		BALANCE at end of period, being "Debtors" carried forward	- - - - -
	<u>£</u>		<u>£</u>

PURCHASES CONTROL ACCOUNT

(General Ledger)

Cash paid	- - - - -	"Creditors" at beginning of period brought forward	- - - - -
Cash Discounts received	- - - - -	Purchases as invoiced	- - - - -
Allowances	- - - - -		
BALANCE at end of period, being "Creditors" carried forward	- - - - -		
	<u>£</u>		<u>£</u>

The Stock Control Account which is also required is shown on page 151.

Personal Sectional Ledgers.—The foregoing Control Account might seem sufficient for Balance Sheet purposes as to Debtors and Creditors, but would not serve for managing the business day by day. Subsidiary Ledgers are therefore required, *viz.* a "Personal" Sales Ledger with a separate account for each customer, and a "Personal" Purchases Ledger with a separate account for each supplier. It will be readily appreciated that the detail items posted to these subsidiary ledgers must agree in the aggregate with the totals appearing in the respective control accounts in the General Ledger. This complete agreement constitutes part of the operation of what is known as balancing the books; but equally it may be described as interlocking, which is the term preferred for present purposes.

There are other sectional Ledgers, but of an impersonal nature, as is shown later. By this system the main (General) ledger is not only kept to manageable proportions itself, with summarised rather than detailed accounts, but the sectional ledgers can be posted by other persons.

For every sales transaction an invoice is made out and sent to the customer, a copy being retained. These copies constitute the items of what is called a Sales Day Book. From this day book the different items are posted to the respective customers' accounts in the Sales Ledger. (With the latest accounting machines the ledger sheet and statement are posted at the same time as the invoice is made out, but the principle remains the same.) It is from the Sales Day Book that the daily or other period totals of Sales are noted in the Sales Control Account in the General Ledger, and allocated to various impersonal accounts. This is discussed later. Credit notes are issued to customers in respect of allowances, and their accounts adjusted accordingly. The credits are entered and aggregated in and posted from a suitable book, and the total noted also in the Sales Control Account.

Similarly, for every purchase transaction an invoice is received from the suppliers, and these invoices, after being passed, constitute the items of a Purchases Day Book. From the Purchases Day Book the different items are posted to the respective suppliers' accounts in the Purchases Ledger. (Again, accounting machinery has condensed and simplified this routine.)

From the Purchases Day Book the monthly or other period totals of Purchases are noted in the Purchases Control Account in the General Ledger, and allocated to various impersonal accounts as shown later.

Where a supplier is expected to make allowances in regard to prices charged, goods, or packages returned, a Credit Claim Note¹³ (a Debit Note has the same effect), is issued to the supplier carrying a request for a credit note to be sent showing that he has adjusted his account accordingly. Meantime the amount of the Credit Claim note is entered in a suitable book and posted therefrom to the respective suppliers' accounts in the Purchases Ledger, and the aggregate noted in the Purchases Control Account.

Whereas a ledger exists to retain the information it receives, a day book serves essentially to distribute information, and is not a book of final entry. Part of its function also is to aggregate periodically the itemised transactions recorded day by day, hence its earlier name of journal. These periodical totals are posted to the respective control accounts.

Bank Cash Book.—The conception of a sectional ledger can be extended to the Bank Cash Book, which may be likened to a continuing ledger account as between the company and the bank. Moneys received, item by item, are entered in the Bank Cash Book, and entry made in an adjoining column of the total sums as and when paid into the bank. On the other side of the Bank Cash Book entry is made item by item of the cheques drawn, which in due course will be presented to the bank and paid out of the Company's Account. The cash discounts granted to the customer or allowed by the supplier are noted for convenience in the Bank Cash Book; and the following tabulation indicates roughly a simple arrangement :

BANK CASH BOOK

	Cash Disc't.	Receipts.		Daily Total to Bank.		Payments.		Daily Total from Bank.
		Sales Ledger.	Other Re- ceipts.			Cash Disc't.	Pur- chases Ledger.	
Cash at Bank at beginning of period .					Cheques drawn item by item.			
Cash Received item by item.					Balance being cash at bank at end of period.			

Where there are separate Sales Cash Books and Purchases Cash Books, these would have the necessary discount columns, and the Bank Cash Book would not. The Bank Cash Book would then record only the daily aggregates of Sales receipts and Purchases payments.

Receipts from customers and payments to suppliers in the Bank Cash Book are posted to the respective personal accounts in the Sales and Purchases Ledgers. Other Cash Book items are treated as the circumstances require. Wages and Salaries Books can be considered as subsidiaries of the Bank Cash Book. The Petty Cash Book can be a subsidiary also of the Bank Cash Book; and its general purpose is to take care of minor cash transactions not calling for the use of cheques. Alternatively, there can be a Wages and Petty Cash Book and a Wages and Petty Cash Ledger constituting a separate system, with a Wages and Petty Cash Control Account in the General Ledger.

It should be noted that provision is made in the Bank Cash Book for "Disbursements." Disbursements, as a term, might, of course, apply to any payment, but is adopted in a special sense here (for lack of a better word) to refer to payments made in respect of non-commodity services, such as rent, rates, employer's liability, insurance, etc., which by their nature cannot take the form of commodities passing through the receiving stores (gas, water and electricity, however, being subject to measurement by meter, may conveniently be treated as commodities).

Impersonal Sectional Ledgers.—The Purchases Day Book and Sales Day Book, referred to above, provide the means for interlocking the Purchases and Sales Ledgers respectively with the General Ledger. The aggregate of the day books, and the corresponding adjustment books (credits to customers, debits to suppliers), together with the aggregates of the Bank Cash Book, as analysed under "Sales Ledger" (discounts allowed and cash received) and "Purchases Ledger" (discounts received and cash paid), will, in the accountant's hands, be arranged to show agreement with the balances, at any time, of all the personal accounts in the Purchases and Sales Ledgers respectively.

The day books just mentioned can, as previously stated, provide a channel for allocating the various items (sum-

marised in appropriate group totals) to impersonal accounts, the process not infrequently being called analysis or dissection. These impersonal accounts may be, and frequently are, kept in the General Ledger; subject to the use of a Stock Ledger (referred to later) for relieving the General Ledger of detail. When this is the case it is almost inevitable that the method of allocation adopted will be by columnar analysis within the respective day books. Convenient as columnar analysis is, the extent to which it can be elaborated is limited by the size of sheets used, and having regard to this limitation and the convenience of the General Ledger, the number of impersonal accounts likely to be permitted is small. The apparent economy of this method makes it attractive, but it circumscribes seriously the administrative use that could, and usually ought to be made, of the initial records.

While agreeing that individual circumstances must determine how far dissection can be carried with advantage, it is desirable for purposes of discussion that in principle there should be freedom to pursue dissection to whatever extent may be found profitable. To enable this to be done involves having impersonal sectional ledgers, which are called here "Production" Ledger and "Distribution" Ledger to link up in terminology and scope with the Chapters on Production and Distribution in Vol. II. These ledgers could carry, as a matter of book-keeping, any number of accounts, although only a very modest number is likely to be thought worth while, but more than could conveniently be handled by columnar analysis in either day book, or provided for in the General Ledger. It is to be understood, of course, that for the purposes of the Profit and Loss Account, and therefore of the General Ledger, the accounts in the Production and Distribution Ledgers would be consolidated into groups. The student is not concerned at this stage with the method of doing this. It is enough if he has the general idea clear, that development of detail, when justified for administrative purposes, need not conflict with good accountancy practice. Office mechanisation makes it possible, incidentally, to have, without delay or excessive cost, much more detailed information than used to be the case.

A third impersonal sectional ledger is the Stock Ledger, which is the subject of a separate reference later.

Production Ledger.—The Production Ledger will include

Prime Cost Accounts and Expense Accounts in connection with Production. These accounts will be made up of the initial allocation of :

Special Purchases.

Issues from Stock (less Returns to Stock).

Disbursements and Salaries.

Wages.

Any extension of the Production Ledger beyond this point is outside the scope of industrial accounting as defined for present purposes and falls within the field of costing, which is discussed in the next chapter. This will explain why, at this point, no provision is indicated for apportioning expenses to departmental or other oncost accounts, or for applying oncosts to the prime cost accounts. A prime cost account can, of course, apply either to standard or special production, and be kept to any required degree of sub-division. Further, production for stock will involve an appropriate transfer from the Production Ledger to the Stock Ledger.

Distribution Ledger.—The Distribution Ledger comprises Expense Accounts in connection with Distribution, made up of initial allocations of the same type as those in the Production Ledger. Extension beyond this point, except as to sales dissection referred to below, again falls within the sphere of costing.

The basis of comparison between sales results and distribution expenses may be by areas, by commodities, by trade channels (e.g. wholesale, department-stores, multiple-shops, retail, hire-purchase, etc.) or by any other characteristics. It is unlikely to be sufficient for modern standards of sales control to lump each class of distribution expense together and criticise it in the form only of a flat percentage of the aggregate sales turnover. Any dissection of sales that is decided upon, if not too elaborate, may be carried out by a columnar analysis in the Sales Day Book. Where dissection is elaborate, as in some businesses it needs to be, it may be well worth while to use punched cards and tabulating machinery. It is assumed for present purposes that in respect of whatever dissection is made, the period totals will be recorded in the Distribution Ledger and will, in the aggregate, interlock with the turnover recorded in grand total in the General Ledger.

The argument as to whether the Distribution Ledger should be separate from the General Ledger or comprised within it (bearing no distinctive sectional title) hinges mainly on how far sales dissection and the corresponding subdivision of distribution expenses are to be carried.

INITIAL ALLOCATION

It is desirable to define as initial allocation any dissection of purchases and sales recorded within the respective day books, for the purpose of charging to impersonal accounts. Initial allocation as an accounting stage applies also to wages and disbursements. It constitutes an analysis of expenditure (and possibly sales) according to kind or purpose.

For the ultimate purposes of costing and budgetary control it is important to classify the allocation accounts on a definite plan as set out below. The subdivision within each class must depend on the characteristics of the business concerned and further costing requirements, if any. Initial allocation does provide for a partial system of costing but does not take matters far enough to comply with the standard of a complete costing system.

Allocation Periods.—Attention may be called here to the advantage, for purposes of comparison, of uniform periods of four weeks being adopted as allocation periods. Where Profit and Loss Accounts are prepared half-yearly, there must be one divided period to enable agreement to be reached between allocations on the one hand, and sales and purchases on the other: in other words, six and a half allocation periods within the half-year. This requirement is a point in favour of a fortnightly allocation period, which gives thirteen even periods in the half-year. In fact, on general grounds of administrative convenience the fortnightly period is very attractive and, with mechanised office methods, is not necessarily too costly. Either system can be fitted in with interim Profit and Loss Accounts, usually monthly or four-weekly, which are strongly favoured in the best accountancy practice. In Chapter VIII* there is outlined a method of control of expenditure that will give short-period indications of results in what may be called a non-accountancy form.

* See p. 179.

Classification of Accounts.—So far as initial allocation is concerned it is necessary to recognise three classes of accounts:

Prime Cost Accounts.

Expense Accounts.

Capital Accounts.

Individual circumstances must determine the subdivisions necessary under each class.

Prime Cost Accounts have reference to the materials and wages entering directly into production. A more precise definition is given in Chapter VII.* A simple illustration can be taken from shoe manufacture, in which the leather and linings requisite for making the shoe constitute prime-cost materials, and the wages paid on the necessary shoe-making processing operations constitute prime-cost wages.

The range of prime-cost accounts necessary in any business must depend on the product and the production policy. There may be separate accounts for each works order, whether in respect of a particular sales contract, or stock manufacturing authorisation, or subdivision of either. In some industries—for instance, where continuous processes are employed, such as oil-refining—the prime cost account can be divided only under sub-processes.

It is the function of a costing system to associate with individual prime cost accounts the appropriate portion of expenses or overheads in the form of oncosts. Industrial accounting as here considered is limited to initial allocation.

Expense Accounts have reference to production expenses (as distinct from prime cost expenditure), distribution expenses and general expenses. Indication of the range of expense accounts or services, likely in each of these divisions to require separate records, is given in the preceding chapter in the illustrations of the respective Profit and Loss Accounts † and, again, at the end of Chapter VIII.‡

Capital Accounts have reference to expenditure on the purchase of revenue-producing assets, such as buildings, equipment, or possibly development or experimental work. In certain circumstances, expenditure on additional equipment of short life or limited use may be charged to a suitable expense account.

* See p. 161.

† See pp. 124/5.

‡ See pp. 211/2.

Purchases.—It will be found convenient to allow all commodity purchases without distinction to be the subject of Goods Received Notes from the storekeeper duly certified as to compliance with order, quantity and quality—an independent inspection being arranged where necessary. For the purposes of later discussion, attention may be drawn here to the advantage of having separate Goods Received Notes for each consignment received from a supplier. By using these as certificates for passing purchase invoices and completing them by adding the price to invoice amounts, unit dockets are created which are of real convenience in operating a system of industrial accounts, particularly where it is intended to lead to a costing system. In view of the importance of the principles embodied, an illustration is given below of a Goods Received Note¹³ that meets all the usual requirements.

GOODS RECEIVED NOTE.		Purchase Requisition No.	Purchase Order No.	Date Goods Received.	Ref. G.R.
Supplier.					
Entered for Stock Control.	Description of Goods.	Quan. Received.	Rejec-tions.	Notes.	Price.
					Invoice Cost.
Per	Carr.	Quan. Certified by	Goods inspected by	Inv. No.	Re-turnable Packages.
Cost Allocation Ref.					Credit Claims.

FIG. 10.

Production purchases fall into two broad classes :

(a) Special Purchases, which are bought for a particular order or account and can be allocated direct, without passing through the stock ledger. It may be desirable to obtain a responsible signature on the respective Goods Received Note confirming the allocation and

acceptance of the goods when they are issued to the department concerned.

(b) Stock Purchases, which are for general use and cannot be allocated until issued in detail from the stores on the authority of a Goods Issue Voucher,¹³ or similar authorisation, of which an illustration is given below.

GOODS ISSUE VOUCHER			Ref. G.V.
Date ready.	G.R. Ref.		For Production Order No.
Quan.	Description.		
Allocation.	Sub- Order.	Quan.	Rate.
			Cost.
Signed	Dept.		Date

FIG. 11.

To facilitate interlocking with the Production, Distribution, and General Ledgers, purchases will be dissected by columnar analysis in the Purchases Day Book under the following headings :

Production (or Factory) Purchases.

(a) Special Purchases.

(b) Stock Purchases.

Distribution (or Sales) Purchases.

Other Purchases (General).

Stock Purchases.—The purchases classified as Stock Purchases are posted to the Stock Ledger, which is an Impersonal Sectional Ledger comparable in its way with the Production Ledger. For most businesses it is usual to restrict the number of accounts in the Stock Ledger to the more important classes of stock, and to post thereto the corresponding summarised

totals, for each accounting period, from the Purchase Day Book. There will need to be a Stock Control Account in the General Ledger with entries of the following nature :

STOCK CONTROL ACCOUNT

(General Ledger)

Stock in hand at beginning of period	- - -	Stock issued (less Returns to Stores) during period	- - -
Stock purchases (less Returns to Suppliers) during period	- - -	Stock in hand at end of period	- - -
	£		£
	_____		_____

There may be separate divisions for Factory Stock and Warehouse Stock, but it will serve for present purposes to confine attention to Factory Stock.

Factory Stock is of two kinds :

Production Material.

Service Material.

Production material is material directly involved in the production processes, while service material is material required for the auxiliary services of attendance, repairs, tools, etc. The distinction is convenient for localising responsibility for expenditure, particularly where it corresponds with divisions in the stores organisation.

Initial allocation of purchases resolves itself into alternative stages ; either of charging or allocating direct to the appropriate account, or allocating first to stock and then to the appropriate account for which the material is ultimately used.

Stock Control Cards.—While it is obvious that the Stock Ledger is not adapted to carry detail entries as to the movements of every item of stock, these may with great advantage be recorded on Stock Control Cards, which also serve other administrative purposes of stock control. The student will doubtless understand that the Stock Control Account, referred to above, is in the nature of a master account to ensure that there is interlocking, in sum total, of all stock transactions as recorded in, more or less, summarised form in the Stock Ledger. The Stock Control Cards are subsidiary to the Stock Ledger, and therefore do not link up directly with the Stock Control

Account. Control is, in fact, used with slightly different meaning in the two connections. A Stock Control Account is designed to give accountancy control, that is interlocking or agreement of aggregate figures. A Stock Control Card, on the other hand, is an administrative instrument for the physical control of stock—to have enough and no more, to have it right, and economically used.

The essential entries on these cards are *Quantities Received and Issued and Balance in Stock*, and these together constitute what is sometimes called a perpetual inventory. If these records are subject to independent scrutiny or checking with actual stock in the Stores or Warehouse from time to time—which may be described as a stock audit—the balances shown as in stock can be made reliable enough to obviate the need for the common annual counting and measuring of stock known as stocktaking.

The Stock Control Cards can, for the larger purposes of stock control, contain with advantage the following additional information :

Ordering Level. (Minimum stock plus stock necessary to cover period required for supply.)

Normal Quantity to be ordered at a time.

Period required for delivery of supplies.

Purchase Requisitions (for replenishment of stock).

Quantity on order.

Balance to be delivered.

Alternatively, the necessary information over and above that of the number in stock can take the form of consumption during a definite period, say three or six months, the number requisitioned for purchase, and the number agreed to be ordered.

Given that there are Stock Control Cards, or their equivalent, in terms of quantities, for each line of stock carried, the Stock Ledger Accounts can be not only restricted to values, but condensed into one stock account dealing with, say, a range of sizes for each of which it may be convenient to have separate stock control cards. This outline of procedure and division of function between quantity records and value records is likely to be consolidated into one routine under certain applications

of office mechanisation. The purpose here is to emphasise that there are two functions, however they may be carried out.

A point of some importance that arises in connection with issues of stock is the price or rate to be charged. With certain commodities there may be wastage by evaporation, spillage, cutting, etc., to be covered by some percentage addition to the purchase price, arrived at by experience. The more common practice is to adopt a rate per unit of quantity that corresponds with the purchase price. Obviously the simplest course is to charge out the issues corresponding in quantity to a particular purchase or consignment at that price. This may cause fluctuations in rates charged to successive accounts which it would be preferable to avoid by averaging. In Chapter X such a case is taken as an illustration of the use of a weighted average. The point has most significance with staple materials such as leather in a shoe factory, yarn in a textile factory, copper in a brass foundry. For staple lines of this sort the use of a fixed rate based on average purchase prices for issues from stock during, say, a given month may be the best solution. This matter, from a slightly different angle, is referred to in Chapter V under Valuation.

Disbursements.*—Disbursements, in the sense used here, have necessarily to be itemised in the Bank Cash Book, and the posting to other books may be arranged without any intermediate abstract. By means of a column in the Cash Book, the necessary aggregates for each period can be obtained. In certain cases it may be convenient to make an abstract of disbursement items for use by a costs department.

Salaries.†—The dividing line between salaries and wages varies. In some businesses salaries are so called when remuneration is paid monthly, and all weekly remuneration is classified as wages. In others, wages refers exclusively to process workers' pay. Monthly salaries are paid usually by cheque; and where secrecy is desired, as it usually is, one method is to pay the monthly aggregate of salaries into a separate banking account, and to instruct the bank as to its distribution to those to whom it is due. The recipient is free to leave the credit at the same bank or to give standing instructions for it to be transferred elsewhere, or, of course, he may withdraw it personally in cash. Weekly salaries are paid, with rare exception, in cash.

* See pp. 194 and 195.

† See p. 196.

From the point of view of industrial accounting, it may be convenient to have a Weekly Salaries Book for all remuneration not on an hourly basis, with provision for columnar analysis under the expense accounts concerned. Provision will be necessary of course for national insurance, and other matters according to the arrangements in force.

Wages.—The term wages, in its limited application to those paid on an hourly basis (called time work or day work) or alternatively by results (such as piece-work or premium work), is almost entirely identified with the factory or corresponding production unit, such as a mine. Even where there is a warehouse for finished stock (constituting the first stage in the distribution phase) employing workers on a similar basis, the wages will probably be paid through the same Wages Book as the workers on production. The remarks that follow on the subject of wages are, therefore, to be given this wider application when necessary.

With wages, before there can be allocation there must be computation of what is due to each worker. In both connections there are frequently many details to be considered. Computation can be sufficiently dealt with here under the two main heads of time wages and extra pay. There may be other matters to be provided for in the Wages Book, such as holiday pay, special allowance deductions by agreement for purposes other than national insurance, etc.

Time-keeping is a simple operation of recording the time at which a worker arrives at and leaves his work. Mechanical time recorders are extensively used for this purpose. By suitable setting of the recorder the worker clocks either "IN" or "OUT," and the hour and minute is recorded. It is fairly general to allow without deduction two or three minutes' grace on arrival. Time recorders are sometimes placed in the department where the worker is engaged, but more usually at the works' gates. The feature of time-keeping calling for most consideration is the adoption of identification numbers —*i.e.* of a Personnel Code for all employees not on a monthly salary. As to personnel not on an hourly, piece-work or similar basis, there should be nothing derogatory in requiring times of attendance and departure to be recorded in their case also. The matter is apt to be considered a delicate one,

but it is doubtful whether discrimination between process and office worker should be carried as far as it is. The real basis for the discrimination that exists in most businesses is doubtless due to the feeling that more individual responsibilities are in most cases borne by office workers.

Personnel Code.—This is usually numerical, and incidentally it may be remarked that identification by number need not be any more disparaging than the use of room numbers for identifying hotel guests' accounts, and is similarly convenient for present purposes. The entries in a Wages Book can be conceived as weekly accounts with individual employees. As personnel codes are used for records pertaining to engagement, attendance, work, tools borrowed, insurance cards, etc., there is a great deal to be said for the identifications being as permanent as possible.

Any difficulties there may be in this direction will probably arise from the limitations of some of the methods of recording the time of arrival and departure of workers. This is more particularly the case when a works is so laid out that there is more than one gate, and especially where workers, when transferred from one department to another, may have to use a different gate. The mechanical time recorder of the card type (that is, with a separate card for each worker) permits, however, the necessary flexibility, provided the card racks are numbered at the side of the pocket to allow the numbering of any rack to be rearranged whenever desired. This method was used at the Thornycroft works, Chiswick, about 1903. A further requirement of numbering is to indicate the department to which the worker is attached for the time being. For this purpose departmental letters may conveniently be prefixed to the permanent number.

It is often very useful for the permanent number to indicate the grade of worker, and this can be done by setting aside blocks of numbers for each grade, *e.g.* :

- 1-99 Supervisors (Foremen and Forewomen).
- 100-299 Skilled Mechanics.
- 300-399 Apprentices.
- 400-699 Semi-skilled Workers—Male.
- 700-799 Labourers.
- 1000 etc. Semi-Skilled Workers—Female.

This is not a specific recommendation, but is given to illustrate a principle of some usefulness in facilitating personnel administration and, in some circumstances, of initial allocation of wages.

Assuming the works departments are designated by letters A, B, etc., then a worker bearing the permanent number of 409 would be identified when attached to Department A, as A 409, and when transferred, other than momentarily, to Department B, as B 409. Except for promotions or replacements there might never be any need to interfere with the original numbers.

Time Wages.—Time wages are wages for time worked at the agreed rate, with an overtime allowance (of quarter time or more) for time worked beyond the agreed normal week or day. Practice differs a good deal as to the precise methods of computing overtime allowances, and is dependent on the agreement reached between the Employers' Federation and the Trade Union concerned, or on Trade Board regulations if the industry is under a Trade Board.

Time cards should preferably be arranged to show overtime separately from ordinary time, as information on this head is likely to be of value to the Management, and assists in computing the total wages earned.

For convenience in making up the Wages Books, it is usual for the wages week to close on Tuesday or Wednesday evening, and for wages to be paid out on Fridays. Practice in some trades favours putting up wages in envelopes and distributing them during working hours in the respective departments, in contrast with the older method of requiring workers to line up at the works gatehouse or other pay station as they leave. Incidentally the time card can be utilised as a pay card, i.e. to convey information to the worker of how his pay is made up, more particularly where extra pay (over and above the agreed pay for time worked) is earned.

Extra Pay.—When any system of payment-by-results is in operation it will be desirable to distinguish in the Wages Book the extra pay over and above the time wages. In some trades (even under a Trade Board) where what is called straight piece-work is worked, no regard is paid to time wages as such, and the worker is paid his or her piece-work earnings. In other trades, and throughout the engineering trades, on piece-work or other

system of payment by results, time wages are guaranteed and any shortage of earnings, as measured by piece or job rates is made up. Where this "make up" is frequent enough to call for notice, it should be entered in the Wages Book in a separate column.

Wages Allocation.—Industrial accounting requirements necessitate an initial allocation of wages (time wages and extra pay) to Prime Cost, Expense and Capital Accounts. This allocation may sometimes be achieved by sectional totals in the Wages Books, corresponding to the range of accounts adopted. This method is liable to be very crude, because it is rare for any worker to be working on the same account (unless it is merely a sub-process account) for the whole of any wages week. A more developed system of accounts will call for a correspondingly developed system of time booking.

With the total time worked known from the time-keeping record, it is commonly sufficient, in the case of piece-workers, for quantities of work done to be reported without any attempt to book the time spent on different kinds of jobs. This method does not serve, however, if the earnings on each piece-work job (as distinct from the piece-work earnings for the week) are guaranteed not to fall below the time-wages for the time worked. Similarly, it does not apply under a premium system where the premium earned on each job has to be computed separately according to the time worked.

Where time-booking is necessary, more accurate records are likely to be obtained, and it will be generally more convenient in the workshops as well as the office, if a job ticket is issued for each job. A mechanical time recorder, placed reasonably near to the worker, is sometimes used for recording times "ON" and "OFF." This system will probably give the best results, and is likely to be the most satisfactory from every point of view, including that of the worker. The alternative methods of time-booking are many, ranging from personal memoranda by the supervisor to a written record by each worker.

The following illustration represents one side of a Job Ticket¹³ suitable for a premium system. It could be simplified for ordinary time or day work. The reverse side of the ticket may be used for recording times "ON" and "OFF."

JOB TICKET

Description.		Prod. Order.	Sub-Order.				
P.N. or A.U.*	Operation.		Quantity to be worked.				
Operation No.	Preparation Allowance.						
Average Time taken per piece.	Operation Allowance.	Quantity Accepted.					
TOTAL JOB RATE.							
Average Hourly Output.	Extra Allowances.						
Check No.	Machine No.	Week No.	Hours Worked.	Time Rate.			
Extra Pay Due							

FIG. 12.

It will be noted that this job ticket provides for the dissection of the job rate between the Preparation Allowance and the Operating Allowance, as explained below.

Job Rates.—One of the factors most disturbing to the fairness of job rates is the ignoring of quantities, *i.e.* when the rate per piece is the same for large batches as for small. A lengthy run of work of the same kind not only leads to a speed of working not usually attainable on a short run, but in particular removes the handicap of initial setting up or getting ready to produce. Early in 1914 Elbourne¹³ advocated, and

* Part No. or Assembly Unit.

had already applied, the principle of expressing a job rate in two parts :

- Preparation allowance per batch.
- Operating allowance per piece.

The simplest indication of what is involved may be given by citing the items possibly entering into each in the case of a turning job, viz. :

Preparation Allowance.

- (a) Taking instructions from supervisor. (It is to be understood that material is already at machine, and further that the supervisor has obtained necessary drawings in advance.)
- (b) Obtaining Tools (Fixing, Cutting and Gauging).
- (c) Preparing machine and setting up tools.
- (d) Restoring machine to normal condition and returning drawings and tools (at end of job).

Operating Allowance.

- (e) Cutting time.
- (f) Securing and setting work in machine (including crane service if necessary).
- (g) Changing tools as necessary. (Allow for grinding if not done in Tool Stores.)
- (h) Starting cut and sizing; also subsequently returning the tool to the starting-place or any other place required, as, for example, in screw cutting. (Sometimes averaged at 25 per cent. of cutting time.)
- (i) Gauging.
- (j) Minimum rest or relaxation. (Sometimes taken at 5 per cent. to 12½ per cent. of net working time of items e, f, g, h, and i.)

The total job rate for a given batch on this basis is worked out as the Preparation Allowance for the batch *plus* the Operating Allowance for each piece finished satisfactorily.

The general failure to work on this principle, which certainly entails more trouble being taken in the computation of earnings, involved the country during the Wars in enormous unnecessary costs for munitions; because job rates that became stabilised

by Government edict had been fixed for the most part on a small quantity basis, and covered preparation on the heavy scale incidental to short runs of work, such as obtained before the Wars. With the mass production conditions that followed the first phase, preparation allowances were in effect being paid without any preparation of the kind in question being repeated.

CHAPTER VII

PRINCIPLES OF COSTING AND ESTIMATING

Under the stimulus of two world wars the science and art of costing, previously neglected in this country, have developed at an ever-accelerating rate. Promptly and skilfully used, costing is an administrative instrument of the utmost value; and, while both a firm grasp of theory and a long period of practice are necessary preliminaries to expert exercise of the art, the practical administrator and the student of industrial administration may, with comparatively little difficulty, acquire sufficient knowledge of the principles of the science to enable them to follow with understanding the work of the expert and to appraise the significance of his findings.

THEORY OF COSTING

COSTING covers the application (as distinct from the initial book-keeping) of accounting results of all expenditure to the purpose of arriving at the inclusive cost per unit of saleable product. This unit may be of any description appropriate to the business under consideration. In coal-mining, the unit may be the ton of coal; in building, each separate contract; in shoes, a dozen pairs of a particular style. The units selected may also vary within any business, as, for instance, in motor-car manufacture, from complete cars assembled to particular sales specifications, to standardised spare parts.

Estimating runs parallel in form with costing, but represents an attempt to forecast the inclusive cost (per unit of saleable product) in the light of previous experience, so far as the costing system can provide appropriate data. In the absence of comparable cost data, it is necessary for estimates to be based on technical investigations and calculations.

A tender is an offer to undertake certain work or supply

certain goods at a stated price, and in principle should be made up of the estimate (*i.e.* estimated costs) with an added "financial margin" to meet financial charges and provide a profit. In the long run, no business can continue except there is in the selling prices obtained, a margin of profit over and above all costs. In times of bad trade, however, individual tenders that do not meet this requirement entirely may be offered, on the grounds that the extent to which the selling price exceeds prime costs will represent a contribution towards expenses of a more or less fixed character; that, in fact, the half-loaf is better than none. How long a business can subsist on "half-loaves" must depend on its financial resources, or on reserves built up when there was more than a "whole loaf" available.

The definition of costing given above requires to be supplemented by a reference to cost accounting. Cost accounting is a term usually applied to cover both the field of industrial accounting, as dealt with in the previous chapter, and costing in the more specific sense used here.

While industrial accounting has been described as a self-contained stage from which it is not necessary to proceed to costing, it is almost certain that, unless there is an intention to adopt a costing system, the accounts in question will not be recognised except as an integral part of the General Ledger.

When the practice obtains of having all impersonal accounts in the General Ledger, there is frequently one omnibus Trading Account, with little or no attempt to distinguish by any system of grouping between production, distribution, and general expenditure. There will probably be aggregate accounts for prime cost expenditure (designated possibly as Manufacturing Wages and Materials) and many businesses have been run successfully with very simple accounts of this kind, without any discrimination as to the incidence of different classes of expenses on different processes or products. Costing in such cases has been limited to the unsatisfactory method of evolving a flat percentage addition to prime costs that would cover expenses in the aggregate.

Stress of competition, with the consequent cutting down of profit margins, has resulted in these crude methods being no longer tolerable. Where they still obtain within a given

industry, they are apt to lead to price fixing that can be suicidal, since, for lack of adequate information, prices are quoted that are uneconomic in the sense of not covering unavoidable costs.

Having regard to the many factors external to a business that affect selling prices, it can hardly be maintained that the main purpose of a costing system is to establish selling prices that will yield a profit. Instead, it might be better argued that the value of a costing system lies in its use for the measurement and control of expenditure to enable a profit to be won from whatever selling price can be obtained; and, given this control, to select the market in respect of product or locality that, in the light of information provided by the costing system, seems to offer the best promise of a profitable return.

This emphasis on profit as the test of successful business operation is not to be read as meaning that a costing system is justified only as it cuts down expenditure on personnel and/or purchases. Its best results may come from the discovery and elimination of waste, which under easier conditions of trade passed unnoticed without apparent detriment to anyone.

Alternatively, by its accuracy of measurement, costing may lead to the adoption of incentives or methods of working that will give either greater output or better output to the advantage of all concerned, not excluding the public, to whom industrial economies must sooner or later pass by the operation of the very same sort of competition that in the first place compelled the economies. The only proviso here is that selling prices shall be fixed intelligently; and, as already indicated, the best hope for that lies in the increasing use of costing on a reasonably sound basis.

In the preceding chapter provision was made for distinguishing between production, distribution and general expenditure because this distinction requires to be maintained in the costing system. Within the division of production expenditure there are prime costs and expenses, in the other two divisions expenses only.

Expenses are very frequently referred to as "Overheads" and to an older generation were also known as "Establishment Charges." The costing of units of saleable product involves

the application of expenses on a basis that is unlikely to be, in any short accounting period, that of the actual expenses incurred in that period. For this reason alone the term "On-costs" is preferable to emphasise the distinction. A more significant reason for using the term "oncosts" is that, when expenses are applied to a particular product or process, they cease to be of the floating character, implied by such a term as "Overheads," and become specific supplementary costs that are added *on* to the basic or prime cost.

To illustrate the distinction between expenses as incurred and oncosts as applied, consider the case of a chair factory with a capacity of, say, 1,000 chairs per week, but which, owing to trade fluctuations, has temporarily a weekly output of, say, only 300 chairs. Rent, rates, management, supervision, plant depreciation and maintenance, financial charges, etc., may be as high with an output of 300 chairs as with one of 1,000 chairs. Some expenses will vary with the volume of output, but rarely in direct proportion. The total actual expenses in the factory per chair produced would be very much higher on the lower output, perhaps double. Again, the actual expense of getting orders for the smaller quantity might even amount per chair to three times the cost under easier trade conditions. Whatever the precise increase per chair in production, distribution and general expenses amounts to on the lower output, the point is that the increase will obviously be appreciable.

In seeking orders in a depressed market, it would be useless to ask higher prices because the actual costs per unit of sale were higher. Yet it might be suicidal to sell at a price which had no cost basis. What has to be done is to estimate, or forecast, taking a period of a year, what average weekly sales can be expected. This estimate must be the outcome of very careful investigation of markets as to potential demand and ruling prices. The estimates of total prime costs and total expenses will have to be applied to alternative assumptions as to sales to find the average output per week necessary to bring inclusive cost per unit to a level that will show a profit on the probable selling prices over the whole year.

It might be shown, for instance, that on an average weekly output of 700 chairs total production costs per chair would

be (but on an average of 600 would not be) low enough for the expected selling price to provide a sufficient margin to cover distribution and general expenses and financial charges, and still leave a suitable profit. In brief, it would be necessary to work out a sales and production budget on the basis of an informed examination of the whole position and the choice available as to markets to be cultivated, and the kind and number of chairs to be made and sold.

The question as to what would constitute a suitable rate of profit would involve consideration of the amount of capital on which it was desired to pay a dividend and the extent to which that dividend would be absorbed by Income Tax. Another factor would be the speed with which materials might be bought and processed, and the finished product sold and payment received. This aspect is discussed at greater length in Chapter VIII. See p. 197.

From this basis it becomes feasible to work out a "budget" rate for applying expenses to prime costs per unit of saleable product—in this case per chair. When expenses are so applied they are best described as *oncosts*, i.e. costs additional to prime costs. While the "budget" oncost rates are derived from a study of estimated expenses, based presumably on actual expenses of a comparable period, it will be seen that the oncosts applied by the "budget" rates to each unit of saleable product will not be the actual expenses or overheads of a particular period. If, as obviously needs to be the case, selling prices do cover prime costs and oncosts as applied by the budget rate, then oncosts so applied can be looked on as expenses recovered. Any balance of expenses unrecovered in this way will absorb accordingly the profit that otherwise would be made. It is the business of the Management to guard against there being any balance of unrecovered expenses. This question is discussed again in Chapter VIII.*

* See p. 197.

FUNDAMENTALS OF

Classes of Expenditure.	Sources of
Primary (Derivative).	
FACTORY PRODUCTION AND FACTORY ONCOST EXPENDITURE CHARGED DIRECT:	
Production Wages (including employees' proportion of National Insurance).	Time-cards.
Production Material:	
(a) Raw material.	Buying Orders.
(b) Components made in factory.	Works Orders.
(c) " bought outside.	Buying Orders.
Oncost Wages.	Time-cards.
Oncost Material.	Buying Orders.
National Insurance (Employers' proportion).	Legislation.
Cash disbursements.	Cash Vouchers.
PERIODICAL FACTORY ONCOST EXPENDITURE NOT CHARGED DIRECT:	
Rent.	Lease or Agreement.
Rates.	Assessment.
Water.	Meter.
Gas.	"
Electric Light.	"
" Power.	"
Heating.	" or Buying Order.
Depreciation.	Engineer's Opinion.
GENERAL FACTORY ONCOST EXPENDITURE NOT CHARGED DIRECT:	
Administrative Salaries, Bonuses, etc.	Allocation by the Directors.
Office Wages.	Pay-roll.
Printing, Stationery, Postages, Telegrams, Telephone, Accountants' Charges, Insurance (excluding National), etc., etc.	Various (Agreements, Buying Orders, Direct Payments).
Cash Disbursements.	Cash Vouchers.

* Other Oncost Wages and material, where not chargeable direct to

FIG.

COSTING

Information.	Methods of Allocation.	
Secondary (Confirmatory).	Primary (Basis).	Secondary (Medium).
Cash-book Entries.	Works Order Numbers.	Job Tickets and Pay-roll.
Suppliers' Invoices. Cost Cards.	" " "	Requisitions and Stock Cards.
Suppliers' Invoices. Cash-book Entries.	Standing "	Job Tickets and Pay-roll. Requisitions and Stock Cards.
Suppliers' Invoices.	" "	Pay-roll. Cash-book Entries.
Cash-book Entries. " "	Grouping of Employees. Nature and object of ex- penditure.	Per PRELIMINARY ESTIMATE—based on (say) the previous year's accounts and subject to the under- mentioned considerations.
Landlord's Demand. Local Authority's De- mand.	Per cubic content. " " ")
Suppliers' Demand.	,, meter.)
" " " " " " " "	" " " " " " " " or Standing Order Numbers.)
Directors' Decision.	Per cost of machinery and plant having regard to location and life.)
Cash-book Entries.	* To Production Shops in proportion (where ap- propriate) to the totals for the preceding year of the Production Wages and Factory Overcost of the Production Shops to be charged, but excluding Production Material, or by other suitable methods according to circumstances.	Per Cost Journal.
" " " "	Nature and object of ex- penditure.)
		Cash-book Entries.

Production Shops, to be apportioned between them on this basis.

The first objective of a costing system, as distinct from the initial allocations of expenditure involved in a system of industrial accounts, is to compute oncost rates in accordance with the "budget" assumptions. This is true even where no budget is properly worked out, because there must be some assumption of business activity, and commonly this is taken as three-fourths of full capacity without overtime. In accordance with the principles previously advocated it is necessary to discuss three phases of oncost rates, viz. :

Production Oncost Rates ;
Distribution Oncost Rates ;
General Oncost Rates.

Beyond these there is a question of a financial margin, covering financial charges and profit, to be added before arriving at an economic selling price.

The procedure for computing oncost rates involves the *apportionment of expenses* (as initially allocated to expense accounts) to departments, processes, etc., according to circumstances. Having made a suitable apportionment it will be necessary next to select a basic unit of application, such as time, wages, quantity or value, as explained later. It is then possible to obtain an oncost rate per unit selected.

These oncost rates have then to be applied with a view to arriving at the total oncosts to be borne by each unit of saleable product. This stage may be called the *application of oncosts*, and in effect, as indicated above, is the recovery of expenses.

Before proceeding to study oncost rates at more length it is necessary to clarify the position as to prime costs.

PRIME COSTS

Prime Cost Wages.—Conceptions as to prime costs vary slightly. Strictly speaking, prime cost wages should refer only to those wages directly expended on the formation of the product. These are frequently known accordingly as *direct wages* or *direct labour wages*. There are likely, however, to be other wages closely linked up with the direct wages, such as supervising, examining, labouring, etc., within the same department. Such wages may conveniently be desig-

nated *secondary wages* * and, so long as they are expended within the same department as the direct wages, the secondary wages may be held to form prime cost wages. As it will probably not be feasible to allocate secondary wages by time booking to specific prime cost accounts, this can be done with sufficient accuracy by treating the secondary wages in total as a supplementary charge on the direct wages either per hour of direct labour or, usually less accurately, as a flat percentage addition to direct wages. The charge per hour will probably be preferable where the "direct" process workers are paid widely differing rates. Alternatively, so long as production oncost rates are computed separately for each department, it may be simpler and equally satisfactory to treat secondary wages as a works expense to be provided for in the production oncost rate. National Insurance contributions, although not secondary wages, can be treated with advantage in the same way—unless it is thought worth while to treat these expenses as a supplement to the individual wages paid, as they can be considered, to be allocated accordingly with the direct wages or secondary wages as the case may be.

Prime Cost Material refers essentially to direct material, i.e. material entering directly into the product, but may also include secondary material, necessary to the manufacturing processes but not actually forming part of the product. There is, however, likely to be difficulty in dealing with the secondary material as a supplement to the direct material allocated to any production order; and the only convenient course may be to treat secondary material under Departmental sundries, to be covered in the Production Oncost Rate. In exceptional cases, such as the use of oil and fuel in an internal combustion engine during its trial, allocation to a special sub-section of the particular prime cost account may be advisable.

In the printing trade, the Federation costing system, as it is called, provides for a flat percentage to be added to prime cost material values as a *material service charge* to cover handling, storekeeping, etc. The principle may deserve recognition in other industries; but, even in the printing trade, a flat percentage addition to value is not necessarily fair as between light-weight expensive papers and cheap heavy

* More usually referred to as *Indirect Wages*. They are also occasionally but unsatisfactorily referred to as *Non-productive Wages*.

papers, for instance. When a material service charge is made, the production oncost rate will, of course, have a proportionately smaller range of expenses to provide for.

Prime Cost Subdivisions.—The foregoing sectionalising of prime costs would serve well enough possibly for a factory on mass production, but, where job and batch production prevail, it is likely to be necessary to recognise subdivisions of prime costs such as :

Production Preparation Costs ;
Costs of Errors and Defects ;
Costs of Final Inspection and Packing for Despatch ;
Net Production Costs.

*Production Preparation Costs.**—The separation of Production Preparation Costs is the most significant feature of the foregoing subdivision ; because there is scope here for discretion or judgment as to how many units of saleable product shall share these costs, or, put in another way, how shall these costs be recovered ? Shall they be all recovered on the first order, or shall it be assumed that there will be repetition orders, each of which will recover part of these costs ? If the latter, over how many units shall the total preparation cost be spread ?

The character of production preparation costs will vary with different industries, but costs will reach their maximum in component or apparatus industries, where considerable expenditure may be necessary for designs, patterns and special tools before production proper can commence.

Costs of Errors and Defects.†—Since Errors (e.g. in specifications, instructions or dimensions) and Defects (e.g. in quality of materials or workmanship) are due to human shortcomings more often than to the special characteristics of a particular contract or product, there is an argument for considering these costs, not as prime costs peculiar to the contract or product, but as a contingency expense, to be spread over production generally by inclusion in the computation of the production oncost rates. It will, however, generally be sounder practice to identify these costs with the individual contract or order on which they occur, but to keep them in a

* See p. 191.

† See pp. 189 and 265.

separate sub-section by suitable transfers based on technical estimates of the cost (*i.e.* loss) involved. Transfer will usually be necessary because, until the fault is discovered, the initial allocation of prime cost materials and wages will have been to Net Production Costs. The ratio of the Cost of Errors and Defects to Net Production Costs (after the necessary transfers or adjustments have been made) will be useful data for management and estimating purposes.

Costs of Final Inspection and Packing for Despatch.—The separation of these costs is likely to be of greatest importance in connection with machinery, particularly where the product is made for delivery and erection overseas. The term Final Inspection is used to include all tests of the finished product before despatch. Tests after delivery and erection in place should be, with the costs of delivery and erection, the subject of a separate account.

As to Packing for Despatch, the only point to be made, perhaps, is that it is assumed that the production process ends when the product is handed over to the Warehouse or Despatch Department, or alternatively to a transport agency for delivery to the customer.

With standardised commodities, both final inspection and packing for despatch may fall legitimately within the field of Net Production Costs, if packing for despatch only refers to a standardised packing in carton or the like, leaving the provision of any further packages to the Warehouse as a distribution expense.

For present purposes it is assumed that the cost of transportation to the customer falls within the sphere of distribution expenses, although, in many cases, it may be more conveniently associated with production.

Net Production Costs.—This sub-section has reference to the prime costs that remain after sectionalising Production Preparation Costs, Costs of Errors and Defects, and of Final Inspection and Packing for Despatch. The reason for this separation is to assist comparison between two contracts or orders which may vary in regard to the other separated factors, but be properly comparable in regard to Net Production Costs. The principle is of considerable importance in some industries, notably engineering, particularly in providing data for estimating purposes.

PRODUCTION ONCOST RATES *

Attention has already been drawn to the over-riding importance of constructing oncost rates of the three kinds previously mentioned in accordance with a "budget" basis of activity, and this point need not be further argued here.

In dealing with production oncost rates it is necessary to agree on the basis on which the rates shall apply.

The major portion of production expenses have a time relation to the work done, and rise or fall according to the length of the period involved; so that the number of hours occupied in production, or time worked, affords a more logical basis than the wages paid. Under certain conditions of repetition, the wages paid may serve well enough as an alternative to the time worked, but the wages basis is not well adapted to meet changes in those conditions or in rates of wages.

Other considerations also favour the use of the time basis, particularly when payment-by-results is in vogue, whether individually or collectively. A saving of time worked should mean a decrease in oncosts charged, though not necessarily a decrease in the wages earned. This is indicated in the cost accounts if production oncosts are applied on the basis of time worked, but not so if the wages paid are the basis. One notable evil of using the wages basis is to encourage the use of cheap labour, when skilled labour at a little higher rate might be obtained with, if total costs are reviewed, really greater economy. The wages basis for applying oncosts may be called the *percentage plan*, and the time worked basis the *hourly plan*.

Whatever approach to accuracy arises from the use of departmental oncost rates, whether percentage or hourly, as compared with a flat rate for the whole works, the improvement will be illusory if in any department there are big differences of conditions, e.g. machine and hand work. Steps must then be taken to distinguish sub-departments for costing purposes, grouping together only similar conditions.

It is only logical to recognise differences as between one machine and another where the difference means distinctly greater or less operating expenses. For example, a large planing machine is commonly in the same department as medium-sized lathes, and, obviously, accuracy demands recog-

* See pp. 124 and 211.

nition of the difference in such conditions. In forge-mills there may be enormous differences in the costs of running different presses, and this is commonly allowed for by using different hourly rates—the more so as expenses incurred during the inoperative time have to be covered in the oncost rates. The adoption, or otherwise, of individual machine oncost rates is a matter for close collaboration of the plant engineer and the accountant, and would be best approached by considering each machine or producing unit as a microscopic department with its appropriate share of each kind of production expenses. Sometimes machine hourly rates include the wages of the operative. This is so under the Federation Cost System in the printing trades.

Some industries, *e.g.* coal-mining and steel-making, lend themselves to the use of weight as a basis for applying on-costs, others, such as shoe manufacture, to a quantity basis.

A schedule of typical works expense items is given in Chapter VIII* grouped under various services. It now remains to consider how these expenses shall be apportioned. In the ordinary way, the first step is to apportion each among the production departments according to a suitable formula. When this has been done, a further apportionment may be desirable as between, for instance, machine processes and hand processes. A third apportionment may be desirable as between different classes of producing units, as already mentioned.

Individual conditions must determine the basis best suited for apportionment purposes, and the following are but tentative suggestions. See also Fig. 13.

<i>Works Expenses Groups.</i>	<i>Possible Basis for Apportionment.</i>
Building Service.	Floor space occupied.
Power Service.	Power consumed.
Producing Unit Service.	Technical Estimate (in certain cases, capital cost of plant).
Tool Service.	Technical Estimate (in certain cases direct hours worked).
Material Service.	Technical Estimate (in certain cases cost or weight of materials used).
Departmental Service.	Direct Hours worked.
Works Administration Service.	Direct Hours worked.
Contingency Expenses.	Direct Hours worked.

* See p. 211.

TOTAL PRODUCTION COSTS

Consideration has now been given to the two main divisions of total production costs, viz. prime costs and production oncosts, and these may be tabulated conveniently as follows—

TOTAL PRODUCTION COSTS	Prime Costs	<i>By initial allocation of</i>	Net Production Prime Costs : Production Materials. Direct Wages. Secondary Wages. Production Preparation Costs. Cost of Errors and Defects. Cost of Final Inspection and Packing for Despatch.
	Production Oncosts	<i>By application of production oncost rates</i>	Based on apportionment of Ex- penses : including Depreciation. Building Service. Power Service. Producing Unit Service. Tool Service. Material Service. Departmental Service. Works Administration Service. Works Contingencies.

Although it is not feasible here to explore the detailed book-keeping routine by which production oncosts become associated with the respective prime cost accounts in the Production Ledger, it is necessary to point out that this association has to be arranged. When it has been done, the prime cost accounts have become accounts of total production cost. A further bookkeeping point will arise in dealing with finished product that is passed into stock. This, again, is rather too technical to discuss here.

DISTRIBUTION ONCOST RATES *

There is rarely enough trouble taken to identify distribution expenses with particular products or with trading channels, *e.g.* through wholesalers, by hire-purchase, or in different sales areas. Any analysis of expenses that might be decided on in this direction would have value only in proportion as sales were dissected under corresponding headings. The objections to undertaking this dissection will doubtless lessen as accounting machinery is more extensively used.

The question of a distribution oncost-rate arises mainly in connection with estimating for price-fixing purposes; though

* See pp. 124 and 212.

in point of fact there is commonly even less recognition than this of distribution oncost rates as such ; and usually, in the preparation of an estimate, a single flat percentage is included to cover distribution and general expenses, financial charges and profits.

Having apportioned distribution expenses under approved heads, in much the same way as production expenses were apportioned to production departments, and similarly in the light of " budget " anticipations, the next step would be to select the basis on which the " budget " distribution expenses are to be applied. The most straightforward basis is that of " budget " production costs (prime costs plus production oncosts) per unit of saleable product delivered to the Warehouse. There are industries, such as coal-mining, where distribution oncosts are better applied on a unit of quantity (or weight) rather than on production costs ; but, for most industries, distribution oncost rates must almost necessarily take the form of a percentage on value. The present recommendation is that this value be the " budget " production costs.

GENERAL ONCOST RATES *

Little needs to be said under this head as there is not much likelihood of discrimination being necessary ; so that it may be assumed that the General Oncost Rate will resolve itself into a uniform percentage on value, though there may, of course, be exceptions. It is desirable, obviously, that the value basis should be that of " budget " production costs as in the case of the Distribution Oncost Rate. Equally the requisite computations will need to be made with due regard to " budget " assumptions.

FINANCIAL MARGIN *

The term " Financial Margin " is used here to include provision for financial charges and profit ; and by keeping financial charges out of general expenses and therefore out of the General Oncost Rate, a better foundation is laid for budgetary control. There is, too, the fact that as between two businesses, even under the same control, one may be operating in part on loans on which interest must be paid, constituting a financial

* See pp. 125 and 212.

charge, while the other may be operating with share capital only, on which interest is payable only as a distribution of profits, or by way of a limited dividend, or both. By associating financial charges with profits this difference in financial arrangements does not vitiate comparison. The Financial Margin is shown later, in connection with preparing tenders, as a percentage on Total Production Costs, following lines similar to those taken when dealing with Distribution and General Oncost Rates. Uniformity in this respect is essential, as it will usually be convenient to consolidate the percentages in completing tenders; though different percentages are likely to be necessary in individual tenders.

PRINCIPLES OF ESTIMATING

Estimating should be a close forecast of actual costs. This applies literally only to the estimates of prime costs, for the provision in any estimate for oncosts is likely to follow lines prescribed by the business generally, which should be embodied in what have been called "budget" oncost rates.

Enough has been said earlier about prime costs to require relatively little supplementing in the present connection.

Estimating is more usually associated with tendering or quoting in respect of a particular inquiry, usually of a constructional nature, in which there may be more or less elaborate technical specifications associated with each inquiry. The general advice can be given to provide separately for every item of material and of manufacturing process; for production preparation cost; for cost of final inspection and packing for despatch; for subsequent costs called for by the specifications; and, not least, for contingencies such as errors and defects, guarantee liabilities, etc.

Estimating can be a close forecast of actual costs, only so far as previous costs have been made available for guiding and informing estimating practice. There may be a good many differences between an inquiry and any previously executed contract for which costs are available; but there may, none the less, be invaluable data to be obtained from study of previous contracts. There may, for instance, be ratios of production preparation costs (e.g. designs, patterns and special tools) and of costs of errors and defects to prime costs.

Similarly the ratio of secondary wages to direct wages will be valuable. In the heavy constructional industries, for example, prime costs per ton are sometimes thought reliable enough to guide estimates. In other industries, graphs may be plotted of prime costs of comparable products previously made, and a lead obtained as to the probable prime costs of, for example, new sizes.

The handicap to carrying out estimating as carefully as might seem advisable is the expense of maintaining an estimating staff without the certainty of obtaining contracts sufficient to justify it. In the building trades, the quantity surveyor has come in as a professional intermediary whose calculations can be supplied with the inquiry as the basis for a tender. The electrical engineering trades have been driven to making the preparation of estimates a trade association matter, with a consequent sharing of expenses among all members. The printers' trade associations also act, on request, virtually as quantity surveyors for their members. In many cases there is room for discretion as to when to take an inquiry seriously and to go to corresponding trouble to work out a close or "keen" tender, and when to quote roughly on a higher scale.

For present purposes it is easier to discuss the estimates necessary either for arriving at standard production costs for purposes of financial control, as discussed in the next chapter, or for fixing list or standard selling prices. In these circumstances, there is no doubt of the advantage to be gained by calling on the design department to work out material quantities to a nicety, and on the rate-fixing department, where such exists, to compute the time required for each and every operation under conditions of efficient production. In this connection the remarks on job rates in the preceding chapter should be recalled. This will mean deciding the size of batch of a standardised product to be put in hand at any time.

The Production Preparation Costs * may have to be recognised as a special charge per unit of saleable product, on the lines discussed on p. 170. The contingency factors, which may not be overlooked with impunity in any estimate, are best provided for sectionally in the case of prime cost materials

* See p. 191.

and wages, rather than as a flat rate on all materials and/or wages alike. In textile weaving, for instance, the percentage of wasted material arrived at from past experience is applied to the estimated weight of yarn required per unit of product. A somewhat similar allowance has to be made in estimates for biscuits, due mainly to evaporation in the baking. In estimating for a machine, there is, for instance, more risk of failure of a casting than of a forging, and the estimates should recognise this. More general contingency factors are assumed to be covered in the "budget" production oncost rate, but even that risk might not always be quite safely averaged, as, for example, in respect of guarantee liabilities on an unproved product.

Selling Price Elements.—The elements entering into a selling price were indicated earlier in discussing the Sales Pound Method * of criticising costs under all heads.

* See p. 125.

CHAPTER VIII

CONTROL OF EXPENDITURE

Careless or unwise expenditure is as wasteful as pouring water on the desert, but parsimonious stinting of productive outlay results in business atrophy. Financial judgment which instinctively avoids either extreme is a rare gift which, however, is capable of cultivation to a reasonable extent. Control of expenditure is one of the most difficult subjects which the student is called upon to pursue, but that should only make him the more determined to gain the rich reward which awaits him who masters it.

CONTROL of expenditure means in principle the planning of expenditure—a cutting of the coat according to the cloth. Moreover, before there can be a plan there must be a policy, of which more is said later; and, inasmuch as the carrying out of a plan calls for the exercise of discretion at almost every step, there must be a great deal of day-to-day authorisation of expenditure.

In practice, the first point that arises is by whom the authorisation shall be given. The ultimate authorities in this regard are obviously the owners of the capital (the partners in a private firm) or their representatives (the directors in a limited company). If they are not personally available to sanction expenditure whenever decisions need to be taken, it is to be presumed that they will delegate their responsibilities in the matter of normal expenditure, reserving to themselves collectively the control of all exceptional expenditure. Their delegate may be the Managing Director, or the General Manager, or a sub-committee of Directors acting as a Finance Committee or Management Board—briefly, the Higher Management.

Even then it would not be practicable or desirable to withhold all discretion as to expenditure from departmental managers. It is they who, in the exercise of their respective functions, can make a given expenditure most effective, and their co-operation is of primary importance. Hence, the best approach to organising the control of expenditure is to think

of the matter in terms of departmental responsibility, and at the same time to provide the higher authorities with the means of knowing that those responsibilities are being carried out in accordance with the Company's general policy.

BUDGETARY CONTROL

Control of expenditure to-day is finding expression more and more in budgetary control, which is really general policy resolved into financial terms. Budgetary control is based primarily on a forecast of revenue or turnover. As explained in the preceding chapter, every costing and estimating system, however crude, must make certain assumptions as to expected production activity, or volume of production (and, by inference, as to expected volume of sales also) in fixing the oncost rates to be used. Whether there is in the full sense any conception of a budget, these oncost rates have the chief characteristic of "budget" oncost rates in that they are based on expected results over a period, rather than on the results of the moment.

"Budget" formulæ must necessarily take many forms to serve the full purpose of controlling expenditure. By prefixing the word "budget" whenever these formulæ are used, it will be brought home to everyone that they are the expression of a plan of financial control to which everyone concerned must work, or show adequate cause why the plan cannot be complied with. To enable the Higher Management to follow the operation of "budget" formulæ, current gains or losses on these formulæ require to be shown in respect of the current weekly, fortnightly or monthly period, and also as a cumulative total to date from the beginning of the financial year. An illustration is given at the end of this chapter that will serve to focus the factors that are likely to enter into a complete scheme of financial control which applies the essential principles of a budget.

Budgetary control in the large businesses where it is more commonly applied can develop much complexity in arriving at the several budgets of sales, production, and finance for a given period. Obviously the budgetary idea must commence with a forecast of sales, or at least an assumption of sales, if only on a basis of previous performance. Given that this has been done, the simplest procedure is to arrive at an estimate of the amount of direct wages involved in the production of

goods to meet the assumed turnover. This will furnish a basis for the number of process workers to be employed, and all the other personnel incidental to their employment and supervision.

The essential purpose of budgetary control is to establish a control of expenditure so that it will correspond with the provisions to that end made in fixing selling prices. It has been argued already from various angles that a budget estimate, or forecast of the volume of business activity for a given period, is a vital condition for arriving at oncost rates that can be expected, in conjunction with competitive prime costs, to control the fixing of selling prices on a competitive and yet profitable basis.

Working from a basis of estimated direct wages and direct material necessary to the year's production programme as budgeted (by interpretation of the sales forecast), and applying the approved "budget" formulæ, it becomes a straightforward matter to arrive at the annual budget quotas for production, distribution, and general oncosts and financial charges. Whether this simple treatment would fit a given case must depend on its circumstances. The method is, however, sufficiently practical to serve the purpose of enabling the student to visualise how a budget might be constructed.

One aspect of budgetary control is likely always to be important, viz. the financial requirements incidental to carrying out the programme laid down. Even in special production, in execution of a specific sales order, where there is no speculative investment in finished stocks, the time interval between initiation of production order and receipt of full payment means that there is often a considerable period during which capital is being increasingly congealed in work-in-progress. This condition is recognised in most large constructional contracts by instalment payments at agreed stages, and sometimes an initial instalment is also required before the contract is commenced.

With stock production, all financing must be arranged by the manufacturer, who must allow for time occupied in production, finding a customer, and obtaining payment. This can easily, under seemingly simple business conditions, amount to six months. If advantage is to be taken of production economies by spreading production over seasons when sales are at a low ebb, then financing will be a still longer affair.

Where hire purchase is in operation, the period of credit

allowed to the customer might run to a year or more, and it is becoming increasingly the practice to turn over to a finance company contracts of this nature. The finance company pays the manufacturer at once the invoice value of the goods supplied, less a charge to cover the delay and risks of collection and its own profits. See also p. 93.

Students concerned to inform themselves more fully on the operations of budgetary control are referred to *Business Budgets and Budgetary Control* by A. W. Willsmore.³⁸

THE SALES BUDGET

In forecasting sales, regard must be paid to the economic conditions obtaining in each market as they affect the buying power of prospective customers. For the sake of brevity, the remarks that follow have application to the Home Market only (*i.e.* Great Britain and Northern Ireland). From the point of view of Sales Budget construction, the first stage is to arrive at a basis for measuring the distribution within a given market of potential buying power with reference to a given commodity. It would be reasonable to adopt as the potential in respect of any market, the evidence which can be deduced from the application of official statistics of actual buying power relating to a selected date. This would reflect the economic conditions then obtaining. From such a basis of measurement the necessary adjustments in respect of changes, or prospective changes, in economic conditions could be made in arriving at a fresh estimate of sales possibilities in a particular connection.

Running with this approach is the more obvious one of forecasting on the basis of past performance. This has the merit of keeping close to earth and avoiding perhaps unduly optimistic estimates of future sales. The danger of this much-used method is that aggregate figures are usually taken and little attempt made to probe into the question whether the whole market is being tapped at a common level of efficiency.

The subdivisions of territory allocated to the different salesmen should be taken as the basis for applying official statistics, so that market measurements of past performance and estimated potential may be compared. A basis for measuring buying power in general may be selected, according

to the grade of buyer for a particular commodity, from amongst such data as the following :

- Population in total;
- Population in age groups;
- Families, graded by number of rooms occupied per family;
- Numbers in various occupations;
- Rateable value;
- Motor-cars owned;
- New motor-cars bought;
- Telephones installed.

Indications of local changes in business activity (for all industries other than agriculture) are published monthly in respect of all counties and over 700 individual towns (strictly speaking, in respect of employment exchange areas identified with each town) in Great Britain, but not for Northern Ireland. These statistics are published in the form of a *Local Unemployment Index*,²³ which gives the percentage of insured persons unemployed.

By the skilful use of information of the kinds indicated, it is possible to measure the relative sales efficiency with regard to particular commodities (provided the necessary sales statistics are kept) in the various subdivisions of the market. By adopting the highest standard of efficiency (or one considered high enough) disclosed in this way as a model for all the subdivisions, a provisional sales budget can be formed that does no more than measure all salesmen by a standard of results that one or more of them has already achieved. The contemplated sales policy for the period for which a budget is being prepared may necessitate the provisional budget being increased or decreased.

By proceeding on these lines, the Higher Management is able to produce a sales budget that can be shown to be built in every detail on a clear and sound foundation, while the individual salesman can criticise and qualify it in the light of his own first-hand knowledge of each place. An important feature of quota-setting conducted on these lines is that each salesman is put in a position to appreciate the basis on which his allotted quota rests. It is particularly important that he should feel that this basis is fair and equitable.

AUTHORISATION OF PRODUCTION

In ordinary manufacturing enterprise, as distinct from one where goods are bought for re-sale, the first stage of financial control is the authorisation of production. Broadly speaking, production is either special to a customer's (*i.e.* sales) order, or standard in anticipation of customers' orders. The term "standard production" is used here to indicate that design and rate of production are decided by the judgment of the manufacturer, in other words are to his own standard.

Special production is usually the subject of a contract based on a tender for which careful estimate has been made of direct wages and materials. The rate of production will need to correspond with the delivery requirements, and will determine the number and kind of personnel required. Thus is derived the necessary authorisation in respect of direct wages, and a similar position obtains with respect to direct material.

In the ordinary way, little or no advance planning is necessary on direct wages expenditure, as usually the requisite process workers can be engaged at very short notice. This hand-to-mouth policy has as its corollary that the discharge of process workers can equally be made at very short notice. In this way, direct wages expenditure can be readily regulated. Further, if there is any change in the production programme, there is no difficulty under these arrangements in curtailing or otherwise adjusting direct wages expenditure. There are, of course, those who disapprove of this freedom of personnel adjustment and would insist on process workers being on long service conditions of employment. There is another side to such a contention; but it would be inappropriate here to do more than recognise that, even if only on humanitarian grounds, the planning of personnel requirements should have at least as much advance consideration as the planning of material purchases; not to mention the avoidance of wastage of special training and experience through unnecessary labour turnover. The two issues, of course, are not entirely parallel, but are so in large measure.

Under the heading of Work-in-Progress Financial Costs on p. 197, consideration is given only to the chronological and financial aspects which it is felt must take precedence over any consideration of what may be called the social aspect of direct

wages control, lest the business become insolvent. The problem of correlating all the various aspects is one the general solution of which calls for close study of the conditions of each business.

The authorisation of stock production is a somewhat involved matter, and requires consideration under three main headings :

- (1) Quantity to be made, having regard to the size of batch necessary to enable production costs to be kept within the standard of " budget " cost.
- (2) Period required for completion. This hinges on the size of batch, and affects appreciably the stage at which stock must be replenished. Unduly protracted manufacture may mean that demand has altered in either an upward or downward direction before goods are completed. Rapidity of stock production is a most important condition for effective expenditure control, as it is also, of course, for maintenance of stock. The latter, in turn, affects the amount of capital that must be congealed or " tied up " in stock to meet demands, particularly if irregular.
- (3) Rate of turnover of stock. This, in the distributive trades, is called " stock turn," and is the key to profits. If stock is turned over six times a year there will be six profits, whereas if only twice there will be only two profits. This multiplication of profits may mean high net profits on capital employed, and/or may permit the profits per unit to be reduced to meet competition without sacrificing a reasonable net profit on capital employed.

In view of the many factors involved, it is usually essential that the authorisation of stock production should be a joint responsibility of the Heads of Production, Distribution, and Finance Divisions under the leadership of the General Manager, Managing Director, Board of Management, or whoever constitutes the final authority. As has been previously remarked, stock production offers in many trades a means of spreading production activity throughout the year, but at the cost of idle capital in dormant stock and of possible physical deterioration and market depreciation. The many issues incidental to stock production call for most careful planning ahead to arrive at the

best possible compromise in each set of circumstances. Some of these are referred to later under Stock and Work-in-Progress Financial Costs.*

Although, by the authorisation of production orders, expenditure on direct wages and materials may be said to have been provided for, this authorisation is not, by itself, effective control. It becomes necessary, therefore, to discuss the matter further.

DIRECT WAGES EXPENDITURE

The use of the words "direct wages" implies that output or product is, or should be, directly related to wages expended. The problem of controlling expenditure under this head is therefore one of measuring output of process workers either collectively or individually.

The method of measuring output varies, and under a system of payment-by-results (if comprehensive, as it rarely is, so as to include all direct labour) the fixing of the job rates † necessary to such a system usually provides an effective means of controlling direct wages. This clearly is the position with straight piece-work, where payment is made only for work done. Under piece-work carrying a minimum guarantee of time wages for time worked the picture is blurred, except distinction is made as to piecework 'make-up.'‡ Under premium systems, with variable proportions of extra pay, earnings are a very uncertain measure of output, though the ratio of extra pay to time wages can be a very serviceable indicator. Where some operations within a department are performed on a time-work basis, and the rest on results, the total wages paid lose still further their significance as an assurance of output.

A method that avoids these difficulties is the setting of a time unit value per item of output for all operations or stages of processing. The time unit, which is usually known as a point, can be a minute or a multiple of minutes. The time unit value, expressed as "points" of output, of any job should be in accordance with the time estimated as appropriate for the purpose of arriving at selling prices. The wages cost per point depends on the grade of labour necessary. For obtaining the maximum benefit from a point system of measur-

* See pp. 197 and 199.

† See p. 158.

‡ See p. 157.

ing output, and therefore controlling direct wages, it is necessary to adopt an approved wages-cost rate per point based on experience and accepted as competitive for the purposes of estimating.

The operation of the principle can be described quite simply, if it is assumed that a point, as estimated in the first instance, represents a minute. The output of a given department or sub-department, or even individual process, is measured in points (each representing the production estimated as being effected in a minute by a single worker) according to a previously arranged schedule for each job. The points of time occupied (actual minutes) are then compared with the number of points of output obtained. If the minutes worked do not agree with the points of output credited, then output efficiency is accordingly above or below the set standard. The departmental management is thus kept in a position to uphold the efficiency of its department to the "budget" level or a higher one. On these lines the scheme can be developed, if desired, to serve as a combined bonus system for direct and secondary workers, and even for the staff.

Further, if, as the result of operating the system under special observation, the average wages cost per point of output is arrived at, this average or some modification of it can be adopted as a "budget" direct wages cost rate. The "budget" direct wages value of the output can be then arrived at by multiplying the number of points of output by the "budget" wages cost rate. By comparing this "budget" value with the total wages paid, it can be seen for a given period in a given department, or sub-department, what gain or loss there has been on direct wages.

It is not suggested that this scheme is comparable with a fully developed costing system; but it can be made to provide, in suitable circumstances, a week-by-week method of demonstrating that output efficiency in relation to direct wages paid is being broadly maintained. Its advantage, for this purpose, over a costing system is again dependent on the circumstances of each business. The essential reason, however, for advancing the method is to meet the requirements of controlling direct wages by departments, corresponding to individual responsibilities, substantially at the time of their expenditure. It is not enough, nor is it fair or reasonable, that direct wages costs

should be taken for granted and wages expenditure control concentrated only on secondary and service wages, as is so often the case.

SECONDARY WAGES EXPENDITURE

If the make-up of selling prices is always kept in mind, it will be clear that secondary wages must be provided for on the assumption that they have a definite relation to direct wages. This relationship has to be established on the basis of an estimated degree of production activity, which, when decided on, constitutes a "budget" formula (as used in estimates) by which to measure current expenditure on secondary wages in terms of current direct wages. A measurement theoretically more accurate would be obtained by applying the agreed formula to the corresponding direct wages "budget" value of output referred to above. In practice, however, there is sufficient safeguard in applying the "budget" formula for secondary wages for each department on the basis of the current direct wages of the department.

By applying the secondary wages "budget" formula to the direct wages a "quota" for secondary wages can be obtained. Of course the disclosure of a loss (*i.e.* when secondary wages are in excess of the quota) may not indicate excessive secondary labour so much as too little production activity.

To the extent that a loss, measured in this way, occurs, it represents failure to work within the terms of the estimate and therefore of the selling price; and unless adjustment can be made, the anticipated profits will be eaten into. Information as to any discoverable item of loss such as this must be identifiable with some individual responsibility and be known at once. If the secondary wages "budget" formulae for each department have been fixed on the assumption that competition could be met on something less than full production activity, it is to be presumed that there will be gains under this head in the more busy seasons to offset losses, where these are unavoidable, in the less busy seasons.

PRODUCTION MATERIAL EXPENDITURE

In discussing earlier the authorisation of production,* emphasis was laid on the aspects of direct wages and direct

* See p. 184.

material expenditure which should be the subject of close estimating before authorisation to produce is given.

There is a more obvious connection between such authorisation and expenditure on direct wages than there is between it and expenditure on direct material; because the latter is rarely the subject entirely of special purchase, and may in large measure be purchased for stock and issued on departmental demand. There is, too, the necessity, if delay in production is to be obviated, of purchasing sufficient margin of materials, over and above known requirements, to meet the contingencies of errors and defects.

From references in previous chapters * it will be understood that production material may be either direct or secondary, and that precise estimating is largely restricted to direct material; hence reference has been concentrated so far on direct material. Compared with direct material, the relative importance and incidence of secondary material varies so much from industry to industry, that the method of controlling the expenditure on it needs to be equally varied. As a general rule it may be laid down that secondary material is related more closely to direct wages, or on occasion to direct and secondary wages taken together, than to direct material. The reason for this is that the consumption of secondary material depends usually on the time any process is being worked or, alternatively, on the volume of work handled at any process. The direct material value may have no relation to either of these bases.

Different as may be the methods of controlling expenditure on direct and secondary materials, it is convenient to associate them as production material, because they are not infrequently the responsibility of one individual.

In engineering, where so many internal administration problems reach maximum complexity, direct material is almost certain to be controlled as to kind and quality by the Design Department or Drawing Office. It has become a nearly universal practice for this department also to specify the quantities required. With kind, quality and quantity prescribed in this way, expenditure is automatically controlled, at least in theory. In practice there is, as mentioned earlier, the provision for possible errors and defects and for misuse and

* See pp. 151 and 178.

wastage. It is essential, therefore, that all direct material when received from the suppliers should pass to the custody of a storekeeper and be released by him only under proper authority. Proper authority at this point is likely to be vested in the department which is responsible for regulating how the production programme should be carried through, *e.g.* what size of batch shall be processed at one time, and when processing shall be started on each batch. Such a department will probably be responsible for progress control.

It may help the student at this point to see in tabular form the routine stages in direct material control, in relation, more particularly, to engineering.

- (1) Drawing Office. *Assembly List or Part List* stating for each component the specifications of material (by code), the net quantity required per part, the number of parts per set. (The Production Order will state the total number of sets to be made.)
- (2) Planning Department. *Purchase Requisition* sent to Purchasing Department stating the gross quantity of material to be ordered (less material in stock) and the time of delivery (see later notes on Work-in-Progress Financial Costs).
- (3) Purchasing Department. *Purchase Order* to Supplier. Copy to Stores Accounts Department and Planning Department.
- (4) Stores Department. *Goods Received Note* for each consignment received. One copy to Account Department for passing invoice. One copy to Planning Department. One to Purchasing Department.
- (5) Planning Department. *Goods Issued Voucher* authorising issues by Stores Department to Processing Department as to quantity and date.

The foregoing is to be read as a typical routine but not necessarily suitable in all circumstances. Further, for expenditure control to be effective there must be constant reference to the amounts for direct materials authorised by the estimate, and the responsibility for this may often be laid with advantage on the Purchasing Department.

A useful method by which the Higher Management can keep purchase commitments within bounds (in case a change of production programme may become necessary after authorisation has been given for production to proceed) is for the Purchasing Department to render a monthly return of the value of all materials ordered but not delivered. It may help if this is dissected under heads appropriate to the business. This information has, of course, an important bearing on financial requirements, and may accordingly need dissection as between

VIII] PRODUCTION PREPARATION EXPENDITURE 191

deliveries arranged within the month following and those of longer date.

Turning to secondary materials, expenditure control must necessarily take the form of control of consumption and the purchase of supplies, commensurate with the approved rate of consumption. To establish this control by rigid doling out of supplies daily or weekly is less sound than to place the control with supervisors, giving them full discretion as to consumption, but holding them responsible for maximum economy. To do this means, of course, informing them of the cost of secondary materials drawn from stores under their authority week by week. They should also be notified of the relation of this cost to the direct wages or other approved basis. Where a departmental "budget" formula has been established for this purpose, the gain or loss on the resulting quota should also be reported to them. A summary of results may even be posted for the process workers concerned to see. Any scheme directed to allocating blame for default should equally impartially allocate credit for performance, for only thus can healthy co-operation be developed.

PRODUCTION PREPARATION EXPENDITURE *

Production preparation expenditure has been already defined and its incidence per unit of saleable product discussed. Although by no means peculiar to engineering, it is in that industry that production preparation has most significance. For special production, the provision in the estimate for drawings and instructions, patterns and special tools, is usually a straightforward application of experience derived from previous comparable contracts. A danger in this case is that there may be a temptation to provide for only part of the cost in the tender under consideration, and to assume that the balance may be carried forward (in the hope of repeat orders) as a capital asset to be written off subsequently. There may occasionally be some justification for this being done, but not sufficient in most cases to warrant it.

A point may be made here having application not only to the foregoing but to direct wages and direct materials on all contract work, viz. that the expenditure week by week under each head (and, as to production preparation, separately under

* See p. 170.

drawings, patterns and special tools) should be expressed as a percentage of the amount allowed for in the estimate, and a report be made, in respect of each item, by the responsible executive that the proportion of progress made in the work corresponds with the proportion of estimated total expenditure. Thus, if £250 has been allowed for drawings and instructions, then when £125 has been spent on their preparation they should be half done. This may mean an unwelcome intrusion of time booking in the Drawing Office, but the principle is an important one. Not only is control of expenditure at stake, but the same reports can be made to show whether, for instance, half the work has been done in half the period allowed.

It is as important for expenditure to be made at the proper rate as for it to be within the proper amount. Too slow progress in the Drawing Office or at any other preparatory stage may mean that too little time is left for obtaining materials and carrying through the processing, if delivery dates are to be kept (and possibly penalties avoided) without overtime or other unprofitable working.

For the most part there is no option as to the work that must be put into drawings, instructions and patterns (except perhaps as to rough drawings and temporary patterns on urgent work), but this is rarely so with special tools. Special tools are usually devised to control processing operations—sometimes, of necessity, to make the operation possible; sometimes to save processing time; sometimes to enable operations to be performed on particular machines and/or with correspondingly less skilled workers; and nearly always to get some advantage in assembly and/or interchangeability of spare parts. There is a temptation, therefore, to spend money on special tools, particularly for standard products, on the ground of their general desirability (and, as a further step, to elaborate them unduly), without sufficient scrutiny beforehand to ascertain whether the extra expenditure will, in fact, produce a fully compensating advantage.

For these reasons it is necessary that proposals in regard to special tools should be submitted and justified item by item, and the estimate of the proposed expenditure be passed by the Higher Management, after being recommended by the production staff interested. Each special tool so authorised will presumably be given a reference number, serving as a drawing

number and a tool order-number, and be separately estimated for. As authorisation will precede the detail design of the tools, it is necessary that, before the tool drawings are issued to the tool-making department, they shall be verified as not involving a greater expenditure than that authorised.

As a further stage, the prime costs on each tool require to be recorded and compared with the estimate as authorised. A relatively simple record of time spent, to be extended at an average hourly rate, may serve with the co-operation of the foreman tool-maker. There is a very good case for applying a suitable oncost rate to the prime cost of tools made in the factory, as otherwise the general expenses attaching to a tool-making department have to be allowed for in the oncost rates of the processing departments benefiting by the tool-making service, and the full cost of the tools is not known.

SERVICE WAGES EXPENDITURE

Control of expenditure under this head can be related to direct wages on the theory that service wages should correspond with production activity. It is usually, of course, sound policy to expend service wages upon repairs at periods when production is at its lowest ebb, and plant can be better spared. Assuming that this practice is followed, taking the whole year, there must be some sort of budget as to the sum-total that may be spent on repairs; and this budget can be related to the "budget" direct wages (as representing the production activity) for the same period. On this basis service wages "budget" formulae can be reached and adopted in the making up of production oncost rates.

If such a "budget" formula is applied to actual direct wages week by week, and "quotas" arrived at, there will doubtless be a series of somewhat erratic gains and losses; but the cumulative net result by the end of the year should be that they will cancel out if the provision for these service wages in the oncost rates was accurately estimated. With information of this kind, particularly if in graph form, before those responsible, there will be a constant effort to keep the cumulative expenditure within the cumulative quota, without waiting until it may be too late to apply correctives.

Service wages, like direct and secondary wages,* tend to fall

* See p. 169.

under the control of a number of departmental heads ; and therefore it follows that it is unlikely that one combined service wages " budget " formula would serve to control all service wages expenditure, because it would hardly localise sufficiently the contributory causes to a total loss or gain. A net gain might mask separate losses that would escape immediate attention. For these reasons it is desirable to discriminate between different kinds of service wages ; and, although each business will have its own requirements in this respect, the dissection followed in the works expenses accounts referred to on p. 211 will serve as an illustration of how it may be done.

It may be necessary to make still further discrimination as to particular items within one or other of these classifications. The departmental head concerned is likely to be the best judge of what information he needs to secure a satisfactory total financial result for the complete service for which he is responsible. The criterion of what is a satisfactory result will be the provision made for service wages in working out the production budget.

There may be in this approach to the problem the nucleus of a system of remunerating departmental heads and personnel according to these results ; but the scale of reward should not be enough to induce any scamping in the service. It should, however, provide an incentive to " make the stitch in time " that " saves nine " and would encourage making a good job of any repairs, for instance, to save having to make a second attempt after a short period. It should serve also to call attention to misuse of plant.

One method of regulating service wages in accordance with a predetermined budget is to restrict the number of workers employed by the service departments. The prospect of regular employment itself helps towards a higher standard of efficiency and a greater willingness to meet emergencies. Many heads of service departments have a tendency to keep more workers in their department than can be constantly employed on really necessary work. Others, again, are not allowed to keep enough to enable the respective services to be carried out as they ought to be in the long-term interests of the Company. The fairest way for all concerned is therefore along the lines of a budget for service wages.

SERVICE MATERIAL EXPENDITURE

Service material, like secondary material, cannot be controlled by reference to an initial estimate, as can be done for direct material. The approach, therefore, can hardly be otherwise than by comparing the expenditure with some basic figure that reflects processing activity, for on this hinges the volume of output, and therefore ultimately of the revenue, to meet this expenditure. A similar position obtains with regard to service wages expenditure, as already discussed, and the simplest way is to use the same basis, viz. direct wages, for testing service material expenditure.

Although service material "budget" formulæ may have an uncertain significance week by week for controlling expenditure (measured by the cost of material drawn from stores and not of purchases made), they are likely to be of great value to measure the cumulative gain or loss, having in mind that these are supposed to cancel each other out in the course of twelve months.

A problem peculiar to service material is that of material recovered in the course of alterations, which, with possibly a little attention, can be made serviceable for use on another job. The correct course is to credit the recovered material to the alteration order and to debit the same value to the Service Stores Accounts ; but, in practice, the opportunity for salvaging or reconditioning the recovered material may not arise for months, and until this work is done the value of the material available for sending back to the Stores is in doubt. It may be necessary, therefore, to have a special account to which the cost of salvage can be debited, and the value of recovered material credited when passed into stock for further use.

DISBURSEMENTS AND SALARIES

Disbursements,* in the narrower sense (of non-commodity service expenditure, in which the term is used here), and salaries, partake largely of the nature of fixed charges, as will be appreciated from the following list of typical items :

Rent.

Local Rates.

Property Insurance.

* See pp. 144 and 153.

Employer's Liability Insurance.**Patent Fees.****Law Costs.****Audit Fees.**

These fall variously under Production, Distribution and General Expenses and would be subject accordingly to different "budget" formulæ. The use of such formulæ can be as valuable in respect of charges which are fixed as of those which can be made to fluctuate according to trade activity. By disclosing month by month the gain or loss under each head, compared with the quota allowed by the "budget" formulæ, the Higher Management is kept aware how far the volume of business obtained fails or succeeds in carrying these charges. Unless they are carried (as well, of course, as all other charges) anticipated profits will not be realised, or anticipated losses will be exceeded. From the point of view of identifying responsibilities for working to "budget" formulæ with individuals, it is particularly important to segregate items of fixed character, for which perhaps no clear personal responsibility can be delegated by the Board of Directors.

Salaries may not be quite so unchangeable a charge as the disbursements cited above, but any fall in the volume of business obtained tends to increase the anxieties of senior staff, either because they have to fight for more business and more economy simultaneously, or to conduct their own departmental work with fewer assistants. Not unnaturally, however, salaries are often reduced to help meet such a situation, while, in addition, the number of salaried officials and/or assistants may be reduced. The administrative responsibility that should be implied by the receipt of a monthly salary in contrast with a weekly wage seems to require that there should be a rather different approach to salary adjustment.

An alternative that works well enough in some cases is to adopt a principle of payment-by-results, that is, a reasonable basic salary plus a share in profits measured (to avoid disputes) by the amount of profit distributed in dividend. This provides an automatic adjustment of total remuneration to correspond with the success or otherwise of the business without the need for adjustments of salaries. Further, as the basic salaries must necessarily be conservative the compensation of a service

agreement for two or three years at a time is sometimes offered to the "key" members of the staff. A staff policy of this character has been found to produce a remarkable stability of personnel, and withal competent and enthusiastic service, over a long period of years.

WORK-IN-PROGRESS FINANCIAL COSTS *

For the present purpose it is sufficient to consider the financial aspects of work-in-progress in terms of direct wages and direct material, without losing sight of the fact that oncost expenditure is being simultaneously incurred.

The authority for work-in-progress direct costs is but the outcome of the initial authorisation of production. To approach the matter now as a separate question of financial costs is to do no more than consider direct material and direct wages expenditure on a chronological basis, on the grounds that premature expenditure involves directly or indirectly a financial cost for interest. Equally, undue prolongation of the stage of work-in-progress means that expenditure on this stage is also a source of financial cost, to the degree that the production or processing cycle is needlessly extended.

The full production cycle commences with production preparation, and concludes with delivery of the finished product to the warehouse or, alternatively, despatch to the customer, according to whether stock production or special production has been undertaken.

Progress control † is a function of production administration that aims at reducing the production cycle to a minimum. Acknowledgment is due to A. C. Bryan²⁹ for evolving a technique of progress control which, in serving this purpose, serves also that of minimising financial costs. The key-note of his method is to work back from the "output" (or despatch) date of the finished product, and (allowing for the necessary intervals between processes and the length of processing time incidental to the size of batch) to arrive at the "input" date of material into the first process department. This input date governs the requisite delivery date of material from the supplier and, by allowing for the period required for delivery, the latest date of ordering is arrived at. The latter would vary, of course,

* See p. 210.

† See Vol. II.

according to whether the material had to be specially made, e.g. a metal casting or forging to special dimensions, or whether it was obtainable from stock.

For the purpose of illustration it is assumed in the following diagram that a machine to be produced has five components, all due to arrive at the assembly department on a given date.

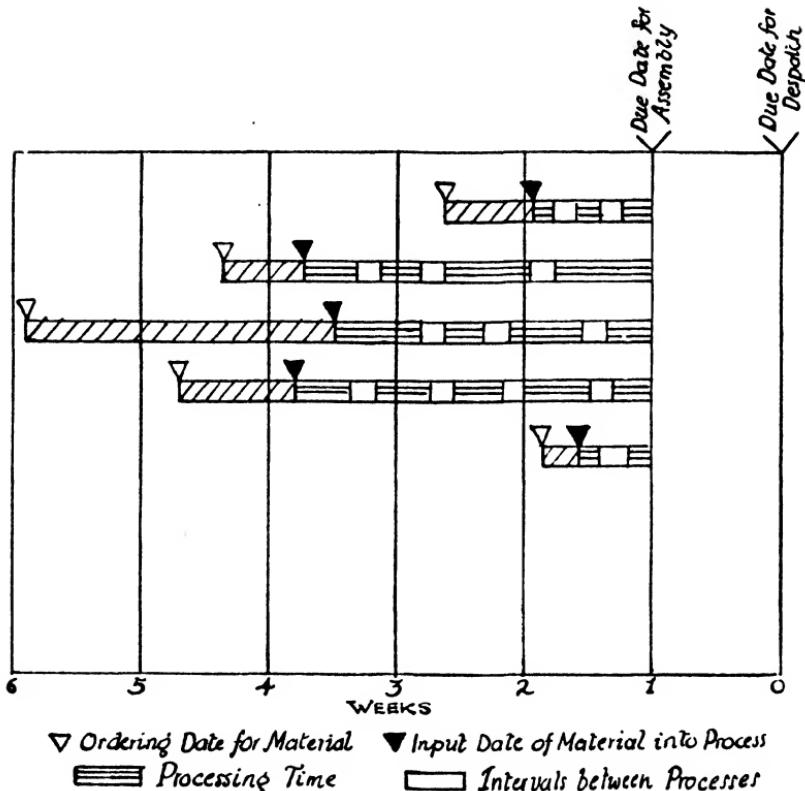


FIG. 14.—Time Chart for Processing of Components.

For the sake of simplicity the Production Preparation stage is omitted from the diagram. The vertical lines representing working weeks are numbered back from the output date. It will be noted that the input dates marked ▼ vary considerably, and the dates when material must be ordered ▽, still more so. The intervals between processes are occasioned by the time required for examination, transport and waiting

to proceed to the next process. It greatly aids control of these intervals to have work awaiting further process lodged in a Work Depot.

Intervals of the sort indicated are largely independent of the size of batch ; so that the production cycles of a small batch may be nearly as long as those of a larger batch, and there will, at the end of the cycle, be correspondingly less finished product available for sale. On the other hand, the apparent economy of large batching may involve undue occupation of processing machines so that the result on other work may be prolonged intervals of waiting. Apart from the failure to keep delivery promises on other work, there will be a financial cost on such delayed work that may more than offset the apparent gain due to a larger batch of the first product being completed in a minimum time. Incidentally it may be noted that it is part of the function of progress control to plan the "due dates" for completing the different processing operations on each batch. The problems attaching to fixing the size of batches are considered broadly in the chapter on Organisation of Production in Vol. II.

The student will note the significance, both financial and otherwise, of incurring expenditure on direct materials and direct wages at the right moment—neither too soon nor too late. By the exercise of efficient progress control there will result not only a shortening of the production cycle on particular batches of product to meet delivery promises to warehouse or customer, but an all-round reduction in the amount of financial investment in work-in-progress, and quite possibly the avoidance of capital outlay in new plant, because of the more skilful allocation of the plant already available. The use of overtime as a remedy can be reserved to meet genuine emergencies, rather than adopted to counteract want of foresight. Incidentally, one of the remedies for a lack of plant capacity at any moment may be to obtain from outside suppliers components suitable for the purpose ; and this is increasingly done, with advantage, where standard specifications and dimensions are employed.

The broader question of shortening the production cycle, from the inception of a contract to its completion, has had a great deal of attention in the building trades, with remarkable results. The problem there is aggravated by the variety of

trades to be fitted into a complex time-table. The general idea can be sufficiently indicated by means of the following chart, which shows the various stages that have to be planned in an engineering contract.

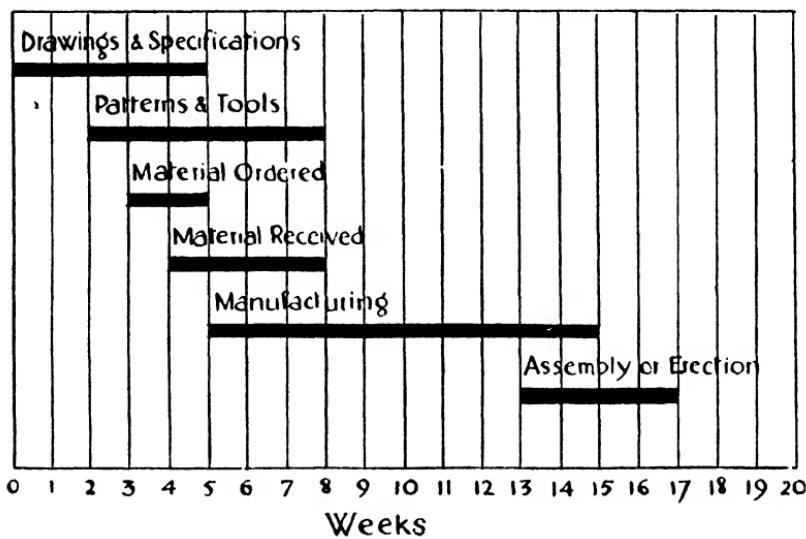


FIG. 15.—Time Chart of Production Cycle.

STOCK FINANCIAL COSTS

In the absence of any standard ratios of stock to stock turnover,* a good deal of inefficiency in this connection has long passed unnoticed, and considerable sums of money have been allowed to lie idle which might have been profitably employed in other directions, such as obtaining maximum cash discounts on purchases.

Under modern conditions of trading, there is little to hinder purchasing being largely arranged so that deliveries in a given month are (as nearly as possible) no more than the consumption of that month. When this has been carried out as far as practicable there is little possibility of further financial economy in this direction. There will, of course, be exceptional cases where it pays to take delivery at one time of more than a month's requirements.

The financial problem of finished product held in stock does not always lend itself to a simple solution. Demand for

* See p. 185.

individual lines may be erratic and thus make it difficult to arrange for replenishments of stock on a satisfactory basis, either as to size of batch (from the point of view of economy of production per unit), or as to time allowable for production. The best general contribution that can be made to solving this problem is to have effective progress control to ensure that production, when required, shall be carried through with a minimum loss of time. Each business has to work out its own solution. Some shorten the time required for production by holding selected components or bulk material in stock either in the purchased state or possibly partly processed. Such steps involve financial costs in respect of material lying idle, but may none the less be advisable in particular circumstances.

CAPITAL EXPENDITURE *

Expenditure on fixed assets such as Buildings and Plant is usually described as capital expenditure, because expenditure in that form is capable of earning money by its use over a long period. On the other hand, its earning powers are offset permanently by the loss of interest on the capital so employed. The fact that it may not be convenient to recognise this interest as an element of production expenses, to be provided for in the production oncost rate, does not affect the necessity of reckoning interest when considering the conversion of liquid cash into fixed assets. All items of capital expenditure, which are individually subject to depreciation and obsolescence, must be viewed accordingly when under consideration for sanction.

Expenditure on fixed assets must have its justification in a corresponding increase in profits with which to meet the various new charges thus set up. The question may therefore arise of the measure of increased production that should result from a given additional capital expenditure and, after that, of the means of obtaining the necessary additional sales. The increase in turnover called for is most easily measured in the form of the ratio of turnover to fixed assets.† This, at least, provides a useful starting-point for discussion of the merits of any proposed capital expenditure. Alternatively it may be necessary to argue from the expected saving in processing costs, if that, rather than extension of trade, is the primary reason for advocating fresh expenditure.

* See p. 133.

† See p. 134.

As between one type of plant and another, the following annual costs call for evaluation :

Interest on First Cost ;
Depreciation and Obsolescence ;
Cost of operation ;
Cost of supplies ;
Cost of attendance and repairs.

ENGINEERING ECONOMICS

There has developed in the Telephone industry, over the last twenty years, an advanced treatment of capital expenditure proposals, which is known as "*engineering economics*," the term used by F. Gill³⁰ in advocating, before the Institution of Electrical Engineers, its extended use. In that it has special reference to the selection of plant, the inclusion of the word "Engineering" is entirely appropriate. Whether the term "economics" is equally suitable is open to doubt, having regard to the general significance attaching to that term. None the less, it is difficult to suggest a better term except, perhaps, "*Engineering Investment Economy*."

In considering outlay on plant, the engineer has nearly always the choice of alternative forms and/or makes of equipment which will meet his technical requirements, and this position may be further complicated by his having the option of incurring by stages the total expenditure involved. The latter aspect is particularly present with public utilities, in which the growth of demand is a dependable factor, and there is the recurring problem of deciding the degree to which it will pay to provide in advance for an extended service. An obvious case is that of laying street mains—gas, electric, water, etc.—where the expenses of opening out and making good afterwards may be a heavy item. There may be also the problem of deciding in connection with the selection of an electric cable, what margin of capacity to allow for subsequent requirements; *e.g.* whether in the first instance to anticipate say ten years' expansion, or to provide only for five years, say, to begin with and then, at a later period, incur new expenditure to meet the needs of the second five years.

It is the merit and purpose of "*engineering economics*" to

associate with the definitely technical aspects an actuarial basis for measuring the investment economy of alternative equipment at alternative dates of installation. The basis is actuarial in that it takes cognizance of interest, and more particularly of compound interest.

The objectives of this method are firstly to measure, on a scientific basis, the true annual cost of any proposed capital investment, and secondly, to establish a proper basis of comparison, in terms of money, between alternative proposals.

Before proceeding to indicate a simple application of the methods, one or two explanations of the terms to be used are necessary.

First or Capital Cost represents the estimated amount of money required, or actually expended for the purchase (or construction) and installation of plant. It includes cost of all material, labour, supervising and construction associated with the project up to the time it is actually placed in service, together with any costs which may be incurred for interest, taxes or insurance during construction and installation.

Annual Cost is the sum necessary each year to meet all the following items of cost :—

Interest on First Cost ;
Depreciation of Plant ;
Maintenance of Plant.

Other items might require inclusion in particular circumstances.

Annual Inclusive Rate or Charge is the expression of annual cost in terms of a percentage of the First Cost. This expression of the annual cost assists comparison between schemes of different magnitude.

Net Residual or Salvage Value is the amount which discarded plant is expected to realise, less the cost of removing the plant from service and effecting its sale. In the latter connection, storage cost may have to be incurred, pending sale, or disposal may involve costs in excess of any recoverable value of the material.

To determine the costs referred to above, computations involving compound interest are necessary in respect of what are called respectively the Annual Sum, and Present Value. In this connection, tables such as Inwood's³² should be used

for obtaining the necessary multipliers, or constants, as independent calculations would be too laborious.

The Annual Sum is the sum that in a given number of years will, together with compound interest, produce a certain amount. This corresponds with the annual premium payable in respect of a Redemption Policy for repayment of a debenture or for the amortisation of leasehold property. It is comparable nearly with premiums under an Endowment Policy, except that these include cover for payment of the sum insured at death, if this occurs before the endowment becomes otherwise due.

The following are examples of the total to which £1 per annum will amount at compound interest of $3\frac{1}{2}\%$ in any selected number of years :

Annual Sum.	No. of Years.	Amount at end of Period.
£1	5	£ 5.363
£1	10	11.731
£1	15	19.295
£1	20	28.280
£1	25	38.950

The same results can be inverted to show the annual sum to be invested (on the same interest assumption) in order to replace £1 at the end of the selected year :

Annual Sum.	No. of Years.	
£0.186 (approx. $3\frac{1}{2}\%$ d.)	5	
0.085 (" $1\frac{1}{8}\%$ d.)	10	
0.052 (" $1\frac{1}{2}\%$ d.)	15	
0.035 (" $8\frac{1}{2}\%$ d.)	20	
0.026 (" $6\frac{1}{4}\%$ d.)	25	

} Producing £1 at end of respective periods.

Present Value is the sum which, if placed at compound interest at the beginning of a definite period of time, will accumulate to a specific amount by the end of that period.

This computation is applied, in the present connection, to determine the present value (or present investment at compound interest) necessary to produce a specific sum at the end of successive years.

Thus :

Present Value a will produce say £1 at end of 1 year.

"	b	"	£1	"	2 years.
"	c	"	£1	"	3 years.

and the Present Value necessary to produce an annuity of £1 for each of three years would be $a + b + c$. The interest tables referred to, however, save this building up and give the following readings (on a basis of $3\frac{1}{2}\%$ compound interest).

Present Value.	Will produce an Annuity of	Over a period of years.
£ 4.515	£1	5
8.317	£1	10
11.517	£1	15
14.212	£1	20
16.482	£1	25

It should, perhaps, be emphasised that the annuity is not derived from merely the interest on the present value (or original sum invested) but absorbs both principal and interest, and at the end of the period nothing is left of the original sum.

One further explanation, viz. of the computation of annual depreciation rates, is necessary before proceeding to the intended demonstration. In Chapter V* the Equal Instalment and Percentage-on-Remainder Value Methods there described made no allowance for compound interest on the annual sums set aside to meet depreciation. It is, however, an essential feature of "engineering economics" that compound interest should be taken into account. Incidentally, P. D. Leake,³³ writing in 1917, argued the same case very thoroughly.

With the recognition of compound interest, the annual sums required have to be worked out on the lines already indicated. These annual sums compare in form with the equal instalments referred to on page 131, though, by virtue of the interest factor, they are of less amount, being in the example of Fig. 8, and on a basis of $3\frac{1}{2}\%$ compound interest, $£900 \times 0.052 = £46.8$ per annum, instead of £60.

It now remains to demonstrate in the simplest possible way the application of the foregoing aspects of "engineering economics" to an imaginary case of alternative equipments A and B. The assumed facts are :—

* See p. 129.

Equipment A. First Cost £4000.
 Estimated Life 15 years.
 Net Residual Value £200.
 Annual Maintenance Cost £120.

Equipment B. First Cost £5000.
 Estimated Life 20 years.
 Net Residual Value £450.
 Annual Maintenance Cost £100.

Assuming $3\frac{1}{2}\%$ interest throughout, the equipments compare as follows :—

	Equipment A.	Equipment B.
First (Capital) Cost . . .	£4000	£5000
Annual Interest . . .	£140	£175
Estimated Life . . .	15 years	20 years
Net Residual Value at end of life . . .	£200	£450
Total Depreciation to be provided . . .	£3800	£4550
Annual Sum, required for Depreciation . . .	$£0.052 \times 3800 =$ £198	$£0.035 \times 4550 =$ £159
Annual Maintenance . . .	£120	£100

SUMMARY.	Equipment A.		Equipment B.	
	Annual Cost.	Annual Rate.	Annual Cost.	Annual Rate.
Interest on First Cost . . .	£ 140	% 3.5	£ 175	% 3.5
Annual Depreciation . . .	198	4.9	159	3.2
Annual Maintenance . . .	120	3.0	100	2.0
	458	11.4	434	8.7

On these figures a net annual saving of £24 should result from the purchase of the more expensive equipment B.

Where the desired engineering requirements can be met by provision of the equipment in two or more stages at selected periods, in lieu of the provision at the outset of the full equipment, the comparison must be taken a step further by ascertaining the "present values" of the respective annual costs over

a period sufficiently long to secure effective results. In the telephone industry a period of 20-30 years is usually taken.

If, in the foregoing example, it is assumed that a third alternative is available, viz. equipment C, which, while more expensive to instal, can be provided in three equal portions at the initial, fifth year, and tenth year respectively, and that each portion has similar interest depreciation and maintenance annual rates as equipment B, the cost comparison between A, B and C becomes as under :—

	Equipment A.	Equipment B.	Equipment C.
<i>Capital Cost :</i>			
Initial . . .	£ 4000	£ 5000	£ 2000
Fifth year . . .	—	—	2000
Tenth year . . .	—	—	2000
<i>Annual Cost :</i>			
Initial . . .	458	434	170
Fifth year . . .	—	—	340
Tenth year . . .	—	—	510
Present Value of total Annual Cost over 20 years } 458 × 14.212	434 × 14.212	$\begin{cases} 170 \times 4.515 \\ 340 \times 3.802 \\ 510 \times 5.895 \end{cases}$	= 6508 = 6167 = 5069

The Present Value multipliers are obtained from the table previously given; but as, in the case of equipment C, the Annual Cost varies at the fifth and tenth years respectively, it is necessary to calculate the Present Value for :—

- (a) An annual sum of £170 over a period of 5 years,
- (b) One of £340 for 5 years commencing at the fifth year, and
- (c) One of £510 for 10 years commencing at the tenth year.

A convenient way of doing this is to take the difference in the Present Value multipliers, thus :—

5 years	4.515
5 years commencing at fifth year,	
8.317-4.515	3.802
10 years commencing at tenth year,	
14.212-8.317	5.895

Viewed in this way, it becomes possible to establish that, on a 20 years' survey, the purchase and installation of equipment

C, although involving a capital outlay of £2,000 more than equipment A, would represent a total financial saving of £1,439. This basis of comparison when applied in the various ways experience has shown desirable, enables the engineer to support his technical recommendation with a financial measurement that can satisfy the scrutiny of financial experts.

Provision for the risks of obsolescence is not considered here, as that contingency is hardly one to be measured in advance, or, at any rate, not by the methods above outlined.

DISTRIBUTION EXPENDITURE *

Enough has been said under previous heads to make little further comment necessary at this point. The method indicated in the preceding chapter for building up tenders and selling prices assumes that distribution "budget" formulae are applied to total production costs per unit of saleable product. This suggestion does not preclude an alternative basis of unit weight, quantity, etc., where such is to be preferred. It will make for more effective control of distribution expenditure if a "budget" formula on the agreed basis is worked out for each head of expense. Even when the same individual is responsible for all the items of expense, dissection, showing the gain or loss on each compared with the "formula" quota, is almost essential to guide judgment as to action to be taken.

GENERAL EXPENDITURE †

The remarks under Distribution Expenditure apply to General Expenditure ‡ almost word for word, and need not therefore be repeated.

FINANCIAL CHARGES §

The point has been made previously that financial charges vary according to the financial constitution and policy of each concern. Some may work on a relatively small share capital and a high proportion of loans from banks or other sources. There is a certain danger in this policy when trade declines; because loan charges are fixed in character and, moreover, if not met at the proper time, the default may lead to the

* See p. 174.

‡ See schedule of typical items on p. 212.

† See p. 175.

§ See p. 175.

calling in of the loan. In this event, a receiver may be appointed to take over the business temporarily with a view to ensuring discharge of its liabilities to the lenders.

The appropriate financial "budget" formula is directed to showing monthly whether the volume of business is meeting such charges, both for the month and cumulatively. As in the case of distribution and general oncost rates (which are equally "budget" formulae), it is usually convenient to apply any financial "budget" formulae on the same basis of total production costs.

CONTROL OF EXPENDITURE TABLES

The series of control tables that follow have been arranged so as to focus, and yet amplify, the principles that have been put forward for control of expenditure generally—except in the field of capital expenditure. The tables illustrated are

- Fig. 16, "Formula" Total Production Cost Table;
- Fig. 17, "Production" Expenses Control Table;
- Fig. 18, "Distribution" Expenses Control Table;
- Fig. 19, "General" Expenses Control Table;
- Fig. 20, "Financial" Expenses Control Table.

FIG. 16. "FORMULA" TOTAL PRODUCTION COST TABLE

CURRENT PERIOD. 4 weeks ending.....	CURRENT PERIOD.					CUMULATIVE RESULTS TO DATE.	
	Expen- diture. £.	Formula. %. [†]	Formula Quota. £.	Gain. £.	Loss. £.	Gain. £.	Loss. £.
	1.	2.	3.	4.	5.	6.	7.
Production Material Consumed							
Dept. A							
" B							
" C							
*Direct Wages	Dept. A						
	" B						
	" C						
*Secondary Wages	Dept. A						
	" B						
	" C						
Total Prime Costs	.	.					
Production Oncosts at "Budget" Rates							
Dept. A							
" B							
" C							
" FORMULA" TOTAL PRODUCTION COST	.	.					

* Including National Insurance payments. † See "Budget" Formulae, page 180.

The first of these tables serves to provide a "Formula" Total Production Cost, corresponding with the production activity of the current period. The quota for Direct Wages should preferably be derived from a "point" computation of the direct wages value of output,* but otherwise the current direct wages expenditure must be assumed to represent efficiency, and be applied as the quota.

The quota for Secondary Wages will be derived by applying a "budget" formula percentage to the quota of Direct Wages.

The quota for Production Material consumed may be derived as a "budget" percentage of the quota of Direct Wages, but admittedly this is likely to be an arbitrary figure (except in certain industries) for short periods, although it may be a fair guide over long periods. The argument for using such a quota is that the resulting "Formula" Total Production Cost may thus comprise a proportion of production material, appropriate to the production activity indicated by the direct wages expenditure. The comparison with the quota of Production Material actually consumed will, incidentally, reflect irregular practice in putting a disproportionate amount of new material into the processing departments—an aspect of progress control † not easily disclosed in any other way.

The table, as set out, provides for each processing department being dealt with separately. This is usually the easiest, as it is the best, way for Direct Wages and Secondary Wages, but may not be equally convenient for Production Material, which may have therefore to be dealt with in the aggregate.

Production oncosts for purposes of this table are applied at "budget" rate on the quota of Direct Wages (or Direct Hours). For convenience, an average oncost rate for a department may be used instead of, say, individual machine oncost rates (where such are in use). This averaging will not seriously discount the significance of the "Formula" Total Production Cost, for the purposes of testing current Distribution and other expenditure (subsequent to Production) in the light of current production activity.

It assists comparison if the foregoing and other control tables are made up for four-weekly periods,‡ though a fortnightly or even weekly period is to be advocated for reviewing

* See p. 186.

† See p. 197.

‡ See p. 147.

FIG. 17. "PRODUCTION" EXPENSES CONTROL TABLE

Formula Percentages are applied to "Quota" Direct Wages Aggregate as furnished by the
"Formula" Total Production Cost Table.

CURRENT PERIOD.	CURRENT PERIOD.					CUMULATIVE RESULTS TO DATE.	
	Expenditure. £.	Formula. %	Formula Quota. £.	Gain. £.	Loss. £.	CUMULATIVE RESULTS TO DATE.	
						1.	2.
4 weeks ending.....							
BUILDING SERVICE :							
Rent and Rates							
Building Attendance and Repairs—Wages							
" " " " " —Materials							
Heating, Lighting and Ventilation—Wages							
" " " " " —Materials							
Fire Insurance and Prevention							
POWER SERVICE (including Transmission) :							
Power Generation—Wages							
" " " —Coal							
Gas							
Power from Outside Sources							
Attendance and Repairs—Wages							
" " " —Materials							
Plant Insurance							
PRODUCING UNIT SERVICE (Processing Plant) :							
Attendance and Repairs—Wages							
" " " —Materials							
Alterations and Removals—Wages							
" " " —Materials							
TOOL SERVICE :							
Attendance and Repairs—Wages							
" Replacements "							
MATERIAL SERVICE :							
Buying Dept.—Salaries							
Works Stores—Wages							
" " " Expenses							
Interdepartmental Transport—Wages							
" " " —Expenses							
Packing for Despatch—Wages							
" " " —Materials							
DEPARTMENTAL SERVICE (other than Secondary Wages) :							
Employer's Liability Insurance							
Holiday Provision							
WORKS ADMINISTRATION SERVICE:							
Works Administration Salaries							
Office Equipment Repairs—Wages							
" Welfare Service—Wages							
" " " —Expenses							
Works Stationery and Office Supplies							
Sundry Minor Expenses							
WORKS CONTINGENCIES :							
Defective Work							
Estimated Guaranteed Liabilities on Product Claims for Negligence or late Delivery							
Reservation for Bad and Doubtful Stock							
Development and Experimental Expenditure not carried forward							
Amount written off Stock Values at Stock-taking							
Depreciation on Buildings, Machinery and Plant, Patterns, Drawings and Patent Rights							
TOTAL							

FIG. 18. "DISTRIBUTION" EXPENSES CONTROL TABLE
Formula Percentages are applied to "Formula" Total Production Cost.

CURRENT PERIOD.	CURRENT PERIOD.					CUMULATIVE RESULTS TO DATE.	
	Expenditure. £.	Formula. %.	Formula Quota. £.	Gain. £.	Loss. £.	Gain. £.	Loss. £.
	1.	2.	3.	4.	5.		
4 weeks ending.....							
Sales Office Salaries and Wages							
Salesmen's Salaries and Expenses							
Agents' Commissions and Expenses							
Sales Promotion Printing and Stationery							
Advertising							
Show and Demonstration Expenses (including Samples)							
Tendering Expenses							
Warehouse and Delivery Expenses							
Bad Debts							
Sales Office Expenses							
Depreciation on Sales Equipment (Offices, Showrooms, Warehouse, etc.)							
TOTAL							

FIG. 19. "GENERAL" EXPENSES CONTROL TABLE
Formula Percentages are applied to "Formula" Total Production Cost.

CURRENT PERIOD.	CURRENT PERIOD					CUMULATIVE RESULTS TO DATE.	
	Expenditure. £.	Formula. %.	Formula Quota. £.	Gain. £.	Loss. £.	Gain. £.	Loss. £.
	1.	2.	3.	4.	5.		
4 weeks ending.....							
GENERAL OFFICE :							
Rent, Rates, Taxes and Insurance							
Heating, Lighting and Cleaning							
Office Equipment Repairs							
Salaries and Wages							
Stationery and Office Supplies							
Postage, Telephone and Sundries							
Depreciation on Buildings and Equipment							
General Travelling Expenses							
Director's Fees							
Professional Charges							
TOTAL							

FIG. 20. "FINANCIAL" EXPENSES CONTROL TABLE
(Items selected from "Final" Profit and Loss Account.)
Formula Percentages are applied to "Formula" Total Production Cost.

CURRENT PERIOD.	CURRENT PERIOD.					CUMULATIVE RESULTS TO DATE.	
	Expenditure. £.	Formula. %.	Formula Quota. £.	Gain. £.	Loss. £.	Gain. £.	Loss. £.
	1.	2.	3.	4.	5.		
4 weeks ending.....							
Debenture Trustees' Fees							
Bank Charges and Interest							
Debenture Interest							
TOTAL							

the efficiency of Direct Wages expenditure and relation thereto of Secondary Wages.

The columns provided for Cumulative Gains and Losses will give the necessary long-term survey of results in respect of expenditure that cannot be kept in step with production activity.

The foregoing forms, although suitable for use in certain circumstances, are not offered in any sense as a ready-made system. The conditions of each business, and particularly of each industry, cannot but entail radical modifications to suit each case. The essential purpose of the illustrations is to enable the student to visualise both the importance and the practicability of financial measurements being made regularly to some datum line. The general value of the idea lies in its insistence on testing every item of expenditure by some declared standard. There may, of course, be ample justification for temporary divergences from standard (the quota derived by a "budget" formula provides a standard automatically adjusted to variations in production activity); but the vital issue for efficient and equitable administration is to know, firstly, that there is a divergence (favourable or otherwise), and, secondly, its precise extent. The remedies for unfavourable divergences, that are not to be explained by temporary causes, may involve changes of policy as often as more direct methods; alternatively special considerations may justify prolonged divergences.

The principle of measurement with the resulting disclosure of trend (corresponding in idea with the cumulative gains and losses of the control tables in this chapter) is given a somewhat broader interpretation in "Higher Control in Management," referred to on p. 269.

CHAPTER IX

OFFICE ORGANISATION AND METHOD

Before proceeding to consider the component parts of office organisation, it is essential to realise that what may be termed for the sake of convenience the office function must necessarily operate in every business, and that the proper purpose of office organisation and method is to enable that function to be exercised as effectively and economically as possible. Misunderstanding of the office function and distrust of the office staff are too prevalent on the part of process workers, who not infrequently fail to appreciate even the benefit to their own operations in the workshop which results from well planned "paper work" in their own works office. This, however, is understandable when it is realised that a good deal of knowledge and perception is necessary to grasp the true significance of the office function and the value of the work of the office operatives to, and its connection with, that of the manual workers no less than to the management. To get this matter in the right perspective, therefore, the student must devote as much care and attention to it as to the more spectacular and colourful happenings elsewhere in the concern.

THE office function may be defined for present purposes as the rendering of services of the following types :

- Keeping the necessary statutory records ;
- Recording the transactions and facts of each day's business ;
- Informing the management as to the net results of these transactions ;
- Giving effect to management or executive decisions.

Such a definition could be said, under the last heading, to include the preparation of working drawings, as it certainly does include the preparation of schedules of material, components, etc., required for carrying out any production or similar order. It is not proposed, however, to deal with design or drawing office organisation as such. With this and possibly

other special cases excluded, it becomes convenient to consider the office function broadly as clerical in its technique, the assistants as clerks, and the office head as office controller. It does not conflict with this conception if the office function is in practice departmentalised, and if different office departments require their own specialised branch of clerical technique. This result of modern administrative methods is made evident in the section on Division of Functions in Vol. II.

Office controllers, or rather those who happen to be in control of office staffs, frequently have professional or technical qualifications as solicitor, accountant, company secretary, buyer, works manager, sales manager, etc.; they are designated by this qualification, and hold their executive position primarily by virtue of that particular ability. They cannot, except in the negligible cases of very small businesses, conduct the office activities for themselves, and so in varying degree they must act as office controllers. In this secondary capacity they do not all have specific training or aptitude; and in this country, at least, office control as such is far too seldom the subject of expert knowledge. In large offices, the exercise of this secondary function of office control may really be more significant than what is usually considered the individual's major profession.

The fact that the office is a relatively expensive item in most businesses makes it, therefore, of prime importance, first, that it should be so organised that waste is to the maximum extent eliminated, and secondly, that the maximum value should be extracted from the office service by the fullest use being made by all executives of information available in the office.

In order to implement the first consideration, it is necessary that every office operation should be analysed very carefully to see that what is being done is necessary, and that it is being done in the best way, in the best place and by the best available person. Such an investigation can only be carried out by a trained individual possessed of high technical ability in office control itself.

The second consideration involves raising the office to the status where it is expected to digest the information in its records and produce recommendations for the benefit of executives generally. It is quite common to find the office

exercising a critical, semi-auditorial, function, but more rare to find it encouraged, even expected, to be constructively and originally helpful.

OFFICE LAY-OUT AND EQUIPMENT

It is beyond doubt that the maximum control and therefore the optimum use of the work of the clerical force cannot be attained unless the office is situated, built, and laid out to secure maximum efficiency, and unless the staff is properly equipped.

The lay-out of the office is conditioned by two types of factor—general and special. The general factor is, in brief, that each clerk must be given working conditions which will enable him or her to carry on throughout the day without undue distraction or fatigue. He or she must be given sufficient space to enable work to be done without discomfort, and desks should be as well laid out and sited for their purpose as the best designed benches in the works. There must be the minimum of distraction from external movements and sounds, and from those made by colleagues. Adequate ventilation and sufficient warmth are essential if mental alertness is to be maintained throughout working hours, and the need for satisfactory lighting, both natural and artificial, cannot be over-stressed. The light should preferably come from the left hand and downward on to the work. Continuous use of artificial light should be avoided as far as possible, as it is an important cause of fatigue.

Special factors will arise within each business which, subject to these general rules, will govern the details of lay-out. Normally, however, these factors amount to no more than the single consideration of grouping the clerks according to function, and then locating the groups to conform to the general flow of work. It is inefficient and wasteful for documents to take a longer course than is absolutely necessary in physical transference from one clerk to another for the carrying out of different operations.

Equipment falls into two main groups, which may be generically described as furniture and mechanical devices. The importance of adequate and appropriate furniture is too often overlooked. In the first place, furniture should be standardised. Supposing that, owing to a change of policy or a reorganisation of routine, the flow of work through the

office were to be radically altered, it should only be necessary, so far as the lay-out of the office is concerned, for clerks to move from one set of desks to another similar set of desks. In the second place, desks should be of sufficient size, without on the other hand occupying more space than is essential—an obvious point that is often overlooked. Chairs should be scientifically designed to give a comfortable working position. Filing cabinets should work smoothly, and with a minimum of noise. All these and many similar points demand study before an office is furnished, especially since faults allowed to pass undetected in the initial equipment can usually be remedied only at prohibitive expense afterwards.

Mechanical devices are so varied in character, and so specialised in application, as to require discussion at more length later. It is sufficient in passing to note their common purposes, which are first speed, and, secondly, the relief of the human brain from purely mechanical tasks; thus eliminating, or tending very nearly to eliminate, errors arising from fatigue and lack of concentration, both induced chiefly by long periods of repetition and monotony, where the work consists largely of copying.

PLANNING OFFICE WORK

The planning of office work is usually directed to the allocation of certain work to certain individuals on a fixed plan and, to a large extent, without regard to fluctuations in volume from day to day. This arrangement works moderately well, because the individual concerned makes, usually, the necessary spurt to meet a pressure of work, and alternatively fills in spare time with bringing up to date matters that have been put on one side for more urgent work.

In principle, all office personnel should, within limits, be considered as members of one team and transferable from point to point to meet variations in pressure of work. In practice, each office department tends to constitute itself an independent unit with little sense of corporate responsibility. The reason for this attitude lies partly, no doubt, in the very limited training of office staff, and the general reliance on departmental tradition instead of a formulated plan and clear-cut instructions, described sometimes as "standard practice." There is, too, the question of speed on a given

job that comes with practice and, conversely, the relative loss of speed resulting from a change of job, until versatility is acquired.

Before there can be any planning of office work there must be close examination and conscious organisation of the work to be done. After that, there must be brought to the notice of all the personnel the most efficient methods pertaining to particular tasks, and provision must be made for their being taught. Such a programme is not to be realised quickly, and is likely to be considered too difficult by anyone not thoroughly versed in the whole art of office administration.

The money that is paid out for office work is just as worthy of consideration as that paid for manufacturing processes and should be subject to the same tests of output as far as practicable. In the factory, all sorts of jobs are given to one operator, according to the kind of equipment he is using. In the office there should equally be interchangeability of work, even though it means the individual concerned moving temporarily from one department to another. Occasional changes of this kind may have, in fact, a stimulating effect on the personnel concerned, and may tend to combat any slight tendency towards stagnation which may exist.

Out of this consideration arises the question of centralising office functions. In some directions, such as filing correspondence, centralisation can be a great advantage to everybody, once the principle has been accepted as being in the general interest. With a central typing office, however, success seems more difficult to attain. There is the problem of meeting calls from several quarters at once, and a tendency for the sense of personal responsibility on the part of the typing staff to be weakened. The first of these difficulties, however, has often been overcome by the introduction of dictating machines to replace the use of shorthand.

It is reasonably safe to say that office efficiency is not to be attained merely by organisation or equipment. To get the right perspective it is necessary to go to considerable trouble to measure the work to be done and to arrange for its doing. To say that it is impossible to measure office work is to admit that there is no basis by which to judge the need for less or more staff. The departmental head may claim that his or her judgment is sufficient in this connection. Granted that it

should be, then the facts on which the judgment is based can be set down and the judgment tested. No really efficient departmental head should fear this test, resent it, or fail to answer it satisfactorily.

OPERATION ANALYSIS AND STANDARDISATION

The fact is far from being generally recognised that office operations repay analysis, or are capable or worthy of standardisation. It is, however, just because the office has for so long been allowed to get its work done in its own way, and because it is such an expensive side of a business, that careful analysis is justified. Perhaps the prime objects of analysis are, first, to reduce the office operations to the point where no unnecessary operation is performed and, secondly, to find out how each operation may be carried out with the minimum of effort.

These simple phrases conceal a mass of patient and ruthless probing into existing methods. Further, such probing must be systematic and informed. Mere diffused thought, however long, will not produce the results which can be obtained by systematic and enlightened analysis, first of what the problem is, point by point, followed by analysis of existing methods, criticism of those methods, and the final creation of a best possible solution for the time being of each phase of the problem. It is precisely because the human element is so predominant in the office that even more careful sifting of data is required than in other fields of analytical work.

It must be evident that this type of research cannot be undertaken at odd moments by an executive whose first interests and main duty lie elsewhere. It must be carried out by a person of trained and scientific mind, able to devote the necessary time to it, and capable of seeing the monetary value of his efforts. From the efforts of such a person there will gradually be evolved a series of best possible methods of tackling the various operations of the many activities of the office. These methods should then be put on record in an Office Manual, to which reference can be made when necessary. Such best possible methods will be taken as the standard methods for the time being. The clerks engaged on each kind of work will be definitely taught, and preferably given simple written instructions, how to follow the standard method, and adherence

to the method will be insisted upon. In the long run, all clerks will prefer the best way, although the forbidding of personal foibles may at first set up a resistance to the new methods.

The phrase "standard methods for the time being" has been used and is intended to emphasise the continuing need for analysis. The work of improving methods, eliminating unnecessary operations, and speeding the flow of work, must go on continuously, although, of course, not to the absurd extent where the cost of investigation exceeds any possible savings.

At the same time, just as men are not less important than machines, so policy is not less important than performance. Subject to the operation itself being necessary, there is merit in reducing expense on any office operation when this can be done without loss of efficiency. Except that be the case, no cutting down of the time required will bring efficiency in the proper sense. On the other hand, the existence of mechanical methods may permit the carrying out of desirable office operations which by unaided clerical labour would be either too costly or too slow to be justified.

OFFICE MECHANISATION

There is perhaps no field of administrative effort where more rapid development is taking place than in the application of mechanical aids to the carrying out of office operations. It is to-day almost impossible to find any routine clerical task for which there does not exist mechanical equipment to carry it out or assist in carrying it out. The very strength of the movement, admirable though it is when allowed to expend its force in appropriate directions, carries with it its own peculiar dangers. It is distinctly possible, even easy, to be persuaded into mechanising operations which need no mechanisation; and while the utmost receptiveness to new ideas should be preserved by office controllers, no expenditure upon mechanical devices should be entered into without careful preliminary enquiry.

The reasons which should lead an office controller to adopt or reject the machines suggested for any particular office operation can be indicated very briefly. The decision must be

based on the test whether the introduction of machines would enable present results to be obtained more cheaply or quickly, more efficiently or accurately, or with less fatigue ; or alternatively would make it possible to reveal results previously desired, but unobtainable except perhaps at disproportionate cost, or after expenditure of a disproportionate amount of time.

The annual cost, as distinct from the capital cost, of the majority of office machines is so small that quite small advantages under any of these heads will usually justify the outlay ; but, on the other hand, the capital amount is usually such that careless choice of the machine cannot be condoned.

In almost every class there is a wide range of competitive makes, each with its distinctive small features which may make all the difference to the applicability of a particular make to a given job.

It should not be forgotten that, in almost every instance, machines carry out what may be described as lower-grade mental work, which, done without mechanical aid, is either a waste of time of skilled clerks and very irksome to them, or else requires the retention in the office of unnecessarily large numbers of lower-grade workers. Machines then, if justified by the test described above, will either increase the amount of time of the skilled clerks available for higher-grade mental work, or alternatively will reduce the total proportion of lower-grade clerks in the office force. The office controller will thus have better personnel to work with, in support of his efforts to have every office operation carried out in the best possible way.

Consideration is given below to the major classifications of office machines ; but the student should not lose sight of the existence and potential value of many machines and devices not specifically referred to here. The periodical Business Efficiency Exhibitions provide a convenient opportunity for making a closer acquaintance with all types of office equipment ; though it may be remarked that business efficiency calls for competent administration generally.

Office equipment is no more, and no less, than an invaluable aid on the road towards business efficiency in the wider sense ; but, by itself, it cannot correct the defects of faulty policy and administration. Its use may, however, lead to the larger

knowledge that will bring its own correction of unsound administration.

“Many of the estimates of efficiency in business are absurdly superficial.

“Often efficiency is vaguely identified with mechanisation, so that if a man never uses a pen and always dictates to a typist, or has extra gadgets on his telephone he is called efficient. Sometimes it is identified with a disregard of the feelings of others so that the man who abruptly dismisses his callers as the clock reaches the quarter is supposed to be more efficient than the man who observes the ordinary standards of courtesy.

“There are many grades of efficiency; a partiality for mechanising one's personal equipment and a capacity for substituting frigidity for friendliness in business interviews come low in the list.

“We came across a business man the other day whose achievement shows him to be efficient, but by no means does he use a complete equipment of modernist labour-saving devices in his office, or never keep a caller waiting if his previous appointment seems to require a little more time than he had allotted to it.

“His strong point is his knowledge of human nature and the energy and judgment with which he applies that knowledge in the conduct of his business. He has alertly and laboriously studied businesses of many kinds. He has got to know what the men and women in them are thinking. He knows what to do if they are to work their best and if the individual efforts are to be combined in the powerful forward drive of a great organisation.

“That is the higher efficiency. He may not insist on having every spoken agreement down in black and white, he may not even have a large window in his office—but he gets results and he helps others to get them. Results, not the latest fashion in mechanism and method, are the test of efficiency.

“This higher efficiency is not easily attained. It is not to be ordered by post from the manufacturer of office appliances. It is won by long and careful study, by imagination, by trained judgment, by practised sympathies. But it is worth the effort, for without it the lesser forms of efficiency count for very little.” (“Callisthenes” in *The Times*, Sept. 15, 1933.)

Accounting Machines.—The common feature of Accounting Machines is the creation, by depression of keys, of a typed record which serves the purposes of book-keeping and, also, by the same operation, retains the sum of the totals of the items so recorded.

Their chief value, perhaps, other than this automatic computation, lies in the possibilities they offer of creating more than one record at a single operation. For example, it is common for Invoice, Ledger Account and Customer's Statement to be created at one and the same time by repeating the Invoice item, by carbon copy, on the Ledger Card and Statement Sheet.

It is almost universal practice to make use of the automatic

computation to show a running balance on every Ledger Account. Thus, before an item is posted, the old balance of the Account is read from the card and put into the machine. The item is next typed, and in that way automatically added to or subtracted from the old balance, thus creating a new balance which is then typed on the card.

The operation of putting the new balance on the card clears the adding register in which the balance was computed, and therefore if the machine had only one register it could not also accumulate daily totals of items posted. Consequently machines are made with two or more registers in order to do this and also to accumulate columnar totals where analysis is required.

This brief description of accounting-machine operation points to three further great advantages :

It is no longer a difficult matter to extract a daily Trial Balance to prove that the net effect of changes made by detail postings in the various account balances corresponds with the totals of the new figures brought into account.

It becomes practicable to prove daily accuracy of posting by first using the machine to aggregate the items that have to be posted (such as, say, the Sales Invoices for the day). During the course of posting the figures posted will be accumulated in the machine and this accumulated total can be compared with the initial aggregate.

In analytical work, the columnar totals are proven by automatic agreement with the accumulated total of items posted.

As far as it is possible to segregate accounting machines into types it may be said that they fall first into two classes :

Those which, having typewriter keys, can write in narrative matter in addition to figures.

Those which, having no typewriter keys, are limited to the writing of figures, with the addition of a few pre-selected symbols and abbreviations.

The former class may be subdivided as follows :

(a) Those which are essentially typewriters with adding registers, usually in the form of detachable totalisers, built on. In such machines the depression of the figure keys writes the item and also enters it in the

appropriate totaliser. The writing of totals, however, is not automatic, but involves further depression of figure keys representing the total visible in the totaliser, but not yet appearing on the paper.

(b) Those which are essentially adding machines, with the typewriter added more or less as a separate feature. In such machines the depression of a figure key has no effect until a motor bar is also depressed. Totals, however, are automatically written by the depression of the motor bar and a "total key."

There is no space here for discussion of the competing merits of these various types, nor does every machine on the market fall exactly into one or other of the classes mentioned.

Tabulating Equipment.—The basis of tabulating equipment is the use of a punched card, in which the position of each hole has a numerical significance. The card is laid out in forty-five or eighty printed columns. Each column consists of a series of digits, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. All the 1's are in the same horizontal line, and likewise the other digits. Each column acquires a numerical significance according to the position of the hole punched in that column, and the punching would be meaningless if more than one hole were punched in the same column.

The columns of digits are allocated according to the information that is to be transferred to the cards. The groups of columns so allocated are called "fields." Each of the columns has its own identification number; thus, the first field might be columns 1 to 4, the second 5 to 9, and so on. The different fields may be applied to any desired purpose; but if the information is not in numerical form already, a code number must be adopted. Thus, in a card incorporating, say, the sale of shoes in a certain area during a given period, a numerical code would be necessary for the different areas, so that, for instance, 12 would mean a particular county, town or salesman's area. Fields can be allocated to £ s. d. values, in which case the digit column allocated to pence is extended to include up to elevenpence.

The *punch* used for punching each card is made very accurately, so that the hole punched to represent, say, 3 in any column will be in exactly the same position relative to the

top edge of the card as 3 in any other column. The punching is done (after the card has been placed properly in the punch) by depressing the key (like a typewriter key) bearing the digit it is desired to punch. The punch also provides for the card being placed so that the punching is done in the desired field. There are certain devices for checking that the punching has been correctly done, and for simplifying the punching operation under certain conditions. With a few weeks' practice, punch operators can become highly proficient.

Cards, having been punched in the respective fields to correspond with the information pertaining to each transaction, have to be sorted according to the form of the tabulation required. For this purpose a power-driven *sorting machine* is required. If, for instance, all the sales in a certain area are to be tabulated, then the cards bearing the code number for that area must be selected from the batch of cards. The sorting machine is set according to column number of the first column in the sales area field. The sorting machine will sort into separate groups all the 1's, all the 2's, and so on. In effect, if there are two digit columns in the sales-area field, 1 in the first column will mean tens (10 to 19), 2 will mean twenties (20 to 29), etc. These are then put through the sorting machine by themselves and sorted according to the second digit, with the result that the 10's, 11's, 12's, etc. are separated.

There is likely to be further sorting necessary ; but, assuming that the tabulation required is limited to the transactions in each sales area, the cards as sorted for sales areas are now passed to the *tabulating machine*. This is operated by power ; and as the cards are automatically run through the machine the punched information is listed in typewritten form and, according to the setting of the machine, the numbers in any field added and listed ; when all the cards for a sales area have passed through the aggregates are listed. This done, the adding mechanism of the machine automatically clears itself, and is ready to deal with the cards for the next sales area.

The use of tabulating equipment for sales transactions is not to be taken as its primary or necessarily most profitable use. A wider illustration is that of tabulating the population census, for which purpose a card is punched for each unit of

the population, and sorted and counted, resorted and recounted, in respect of each field of information—place, age, sex, marital condition, occupation, etc. As, however, aggregates only are wanted, listing of items is not necessary. A more complex illustration is the use of tabulating for accounting-cum-statistical purposes.

Tabulating equipment is largely rented, and the annual charges are heavy. The cards themselves are a costly item, but sometimes one card can be used for several transactions. When the volume of work to be done is heavy and continuous, large economies can be achieved by the use of such equipment. The flexibility of a unit of equipment enables the sum-total load necessary for economical results to be obtained sometimes by doing many different jobs, rather than by large volumes of work of a few kinds.

A new type of tabulating machine enables the ordinary difficulty of mechanised accounting—the time and trouble spent in picking up old balances before each posting and extending new balances after each posting—to be avoided. The new machine, which is capable of dealing with thousands of separate accounts, "stores" the items posted to each account, accumulating the separate totals at the same time, and does not reproduce them until the separate records are required at, say, the end of an accounting period. At each such period a typewritten card for each account, duly totalled, may be prepared and the machine is thereby cleared and ready to deal with the next period.

Calculating Machines.—Of all mechanical aids to office efficiency, the calculating machine and the typewriter are the most frequently and easily justifiable by the test described earlier. Even the most expensive calculating machines represent an annual charge which can be saved very quickly indeed in any office where calculations are a regular, even though small, feature, because the saving of time on each calculation is proportionately so high.

Calculators are divisible into two main classes :

(a) The type in which figures are set up on a keyboard and remain set up until released by a separate operation, the actual calculation being carried out by the turning of a handle, or, in the case of electrical calculators of this class, by depression of a motor bar.

(b) The type in which actual calculation is performed by depression of the keys of a keyboard.

The first type (a), which for convenience may be called the "permanent set-up" type, has two subdivisions—the flat keyboard and the barrel type. In the flat keyboard machines, a factor in a calculation is set up by the depression of keys on a flat keyboard, whereas on the barrel type the set-up is done by the moving to indicated positions levers set in a quarter-cylinder.

The general advantage of the permanent set-up type of calculator is that operation may be quickly learnt and requires little practice. It is therefore peculiarly suited to those offices where it is not practicable to centralise calculating work in the hands of a specialised group of clerks.

The general principle of practically all calculating machines in use to any extent is that multiplication is carried out by continued addition and division by continued subtraction. This would be a long process if it were not possible to economise the number of additions or subtractions required. On the permanent set-up type of machine this is achieved by making movable the carriage which contains the "answer register."

For example, suppose it was desired to multiply 99 by 12. The figure 99 would be set up and added twice (by turning the handle twice) with the carriage in the "units" position. The carriage would then be moved one stage, and 99 would be added once in the "tens" position, thus achieving the answer by three additions (three turns of the handle) instead of twelve which would have been required by an adding machine.

In the second type (b), generally known as the key-driven type, there is also a keyboard, and depression of a key at once adds the figure represented by that key to the total shown in the answer register (or subtracts it from that total as the case may be). The answer register is not contained in a movable carriage, and so economy of additions or subtractions has to be achieved in a different way.

When factors of a large number of figures are involved this type of calculator requires expert manipulation, and it is therefore chiefly suited to offices where calculation can be centralised.

Duplicating Machines.—With the high relative cost of printing, more particularly for small quantities, there has

over many years been continuous development of duplicating processes. Some duplicators are miniature printing machines using metal type, but most are designed to reproduce from a stencil, soft metal plate or hectographic master, a copy of which can be prepared on a typewriter, or by hand writing or drawing.

So high is the standard of work produced on modern machines, that they are widely used not only for distributing information to staff and agents, but also to the public in the form of circular letters and illustrations.

As is well known, a special business is made of producing what are called facsimile letters in a style so like direct type-writing, that names and addresses may be filled in afterwards without the difference being noticeable. Facsimile letters are produced to the best advantage from metal type printing through a ribbon which gives the typewriter effect in impression and colour.

By the use of electros it is possible to reproduce letter headings and forms for internal use—the latter being frequently a very profitable form of office economy. Forms required in quantities too small to justify printing can also be produced expeditiously by preparation on a stencil or hectographic master. This course is to be strongly recommended where, before putting a new form into operation, the need for experimenting is felt. The spirit hectograph is of particular value for this type of work, as it uses a non-absorbent paper which is suitable for writing on in ink as well as pencil. The accurate registration of the paper passing through the machine permits standard forms, printed in quantity, to be overprinted with detail which may vary from time to time, or as between different departments. In addition, a number of different colours can be reproduced simultaneously from the same master copy, enabling graphs, charts and diagrams to be prepared rapidly.

Many statistical tables, graphs and the like are susceptible to photographic methods. The great advantages of this means of duplication are that an exact copy is ensured without checking, and, in the case of some machines, the size of the reproduction may be different from that of the original (either larger or smaller). The method is widely applied for obtaining extracts from books and copies of legal documents. The latter

application obviates original documents having to be used for reference purposes.

Copies of letters, invoices or other documents required for record purposes can also be made at high speed by photographing on cinematograph film. Records made in this way occupy very little space, and can be readily referred to by inserting the film in a daylight projector which throws an image of the document to any desired size on to a ground glass screen. Prints to any size can, of course, be prepared from the film should this be necessary.

Addressing Machines.—Addressing machines for addressing envelopes, wrappers, statements, etc. are of many years' standing. At first the address plates were of metal only, with embossed lettering, and were correspondingly permanent. Now fibre stencils, that can be prepared on an ordinary typewriter, are also employed, and these are guaranteed to withstand many thousands of impressions.

It is possible to manipulate the addressing machines so that particular plates (or parts of plates) only are selected, and further, for the paper printed on to be moved forward in such a way as to give a condensed list, say, of names only, closely spaced. By these means the addressing machine has become applicable to the preparation of wages sheets or payrolls. Numbers, names, wages rates, insurance, and other deductions can be repeated week by week without any writing and without re-checking. The plates being in unit form can be arranged in any convenient order, new plates inserted in their proper sequence, and superseded ones taken out. The same plates can be used with suitable manipulation to prepare time recorder or clock cards (with bold numbers) and pay envelopes or tickets.

EXPOSED RECORDS

The expression "exposed records" rather embodies a principle than indicates a particular type of mechanism. It stands for the idea that records should be clearly in evidence if they are to serve their full purpose. The most striking application, perhaps, is when exposed records take the form of large boards, with coloured pegs to show the position or progress of operations. It would be very unsafe to argue that

such spectacular efforts represent the last word in efficiency—it depends on the benefits derived.

The point to be stressed in the principle of the exposed record is that its use should not be restricted to the one who keeps the record, and in particular that the Higher Management may inspect records quickly, regularly, and intelligently, without the cost and delay of special summaries.

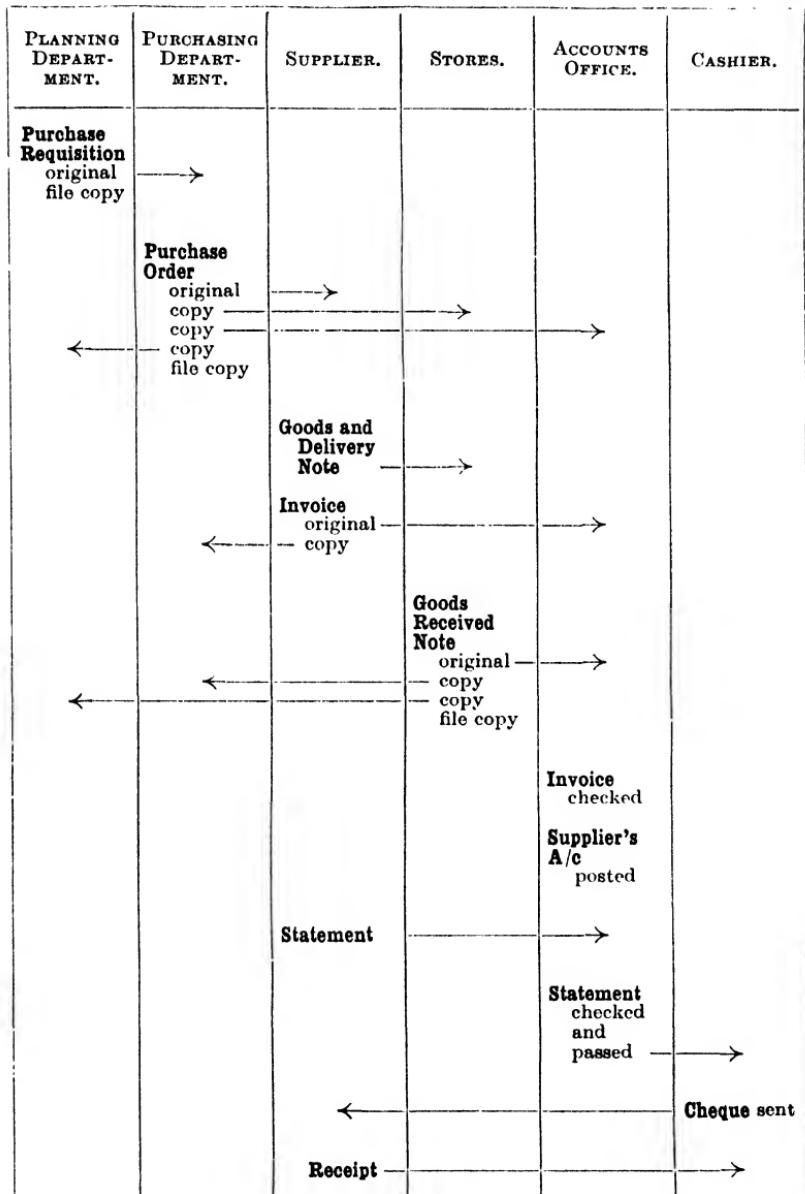
It is altogether desirable to reach a position where as much information as possible pertaining to the daily round is open to all the administrative staff, and even to the whole personnel, and, not least, to the principal officials whose show of interest can be such a stimulus towards more efficient team work.

There is a marked tendency now towards having "visible" records by means of cards arranged on trays so as to overlap and show their headlines. This saves much time in finding the card required. By the use of coloured tabs, the features of an exposed record can be developed to show various warning signals. Coloured tabs attached to the edges of machine accounting cards also provide a form of visible record, enabling cards to be selected rapidly for various purposes.

ROUTINE DIAGRAMS

A valuable aid to the analysis of existing methods and the planning of new, is to be found in the "Routine Diagrams," by means of which office routines may be set out in graphic form, and thereby the more easily understood and criticised. An obvious and simple application of this method is to trace the movements of a particular document through the various departments which handle it. Although in any office system where a large number of different documents are in use, the work of preparing a complete set of routine diagrams is very heavy, yet the results are almost invariably beneficial; as the charts throw into prominence the practically inevitable inefficiencies which exist in routines built up *ad hoc*, and not on a basis of scientific analysis.

There are many forms which such routine diagrams may take, and both the form and the degree of detail illustrated should depend on the purpose for which they are prepared. The example given in Fig. 21 illustrates the routine which, in appropriate circumstances, might be used in purchasing and paying for materials. The broad outline only is revealed,



The diagram is based on the procedure set out on p. 190, omitting the Drawing Office but including the Accounts Department and the Cashier.

For a more elaborate chart of Production Control documents, see Ch. IV, on Organisation of Production, in Vol. II.

FIG. 21.—Routine Diagram.

but obviously it could be expanded until the work of each individual clerk is shown in detail. In any such diagram it is not, however, advisable to obscure the general plan by including details which are better given in supporting notes.

It is appropriate, at this point, to emphasise the advantage of up-to-date diagrams of the departmental and general organisation. There is perhaps no greater source of inefficiency than ill-defined chains of responsibility; and the existence of clearly drawn diagrams, showing to whom each member of the personnel is responsible for each part of his work, both focusses attention upon the need for definition of responsibility, and at the same time satisfies the need. The illustration of a Departmental Organisation Diagram in the Chapter on Division of Functions in Vol. II may serve as a starting point for a diagram reflecting an existing or desired arrangement in a particular case.

DESIGN OF FORMS

There is more in the design of forms than is usually realised. It is not too much to say that a well-designed form will often greatly facilitate clerical work, but it is sometimes only too obvious that insufficient consideration has been given to form design.

Before drafting a form, a list should be made showing all the items of information which are to be included and, against each, who is to enter the item, and who is to read and act upon it. A critical examination of this list should reveal whether the form will fulfil the purpose for which it is intended, and whether any unnecessary information has been included.

In designing the form the following considerations will apply :

1. *Paper*.—The sizes of forms should be standardised as far as possible, and should cut economically from standard sheets. The quality of paper used should be adequate, having regard to how it will be written, *i.e.*, pencil, pen, typewriter or carbon paper, the amount of handling and folding to which it will be subjected, and the period for which it will be retained in use and in file.

2. *Type*.—The type selected should be clear, and easily read, and the size adopted for each heading and explanatory note should be carefully chosen so as to give proper prominence

to those items which it is desired shall be readily picked out, or which are liable to be overlooked. A suitable type, which is widely used, is Gothic.

3. *Arrangement*.—The arrangement should be logical, items to be entered or read together should be grouped, and items such as serial numbers or dates which will be used as a filing reference should be placed in a convenient position (usually the top right-hand corner).

4. *Identification*.—The title of a form should be carefully chosen so as to be descriptive and not liable to confusion with others. Where there are many different forms in use, a distinguishing code number is a useful means of identification. To facilitate sorting and distribution, it is usual to adopt some easily recognisable mark. It is sometimes the practice to have forms printed on different coloured papers, but distinctive colours are too few for each to have a completely distinctive meaning, and their use is limited. Where there is more than one copy of a form to be distributed, it is often convenient and economical to use on each, to indicate destination, bold printing such as "Accounts Copy," "Stores Copy." This legend or an equivalent symbol, such as a block circle, should be put in one regular place—such as the lower left-hand corner.

5. *Spacing*.—Frequently, too little attention is given to spacing which, obviously, should be adequate for the information to be inserted according to whether hand- or type-writing is to be used.

When a final draft has been prepared, it is often advisable to test it in use before ordering a quantity, and for this purpose a small quantity should be duplicated. In designing forms, the printer's advice as to paper and type, as well as the cost of printing, can be invaluable, and he should be consulted before an order is placed.

STATIONERY CONTROL

Using the word "stationery" as a convenient term for all printed forms and office supplies generally, stationery control becomes an important item of office organisation.

There can hardly be two opinions about the importance of taking proper care of stationery; and this means not only proper accommodation for its storage, but proper custody.

The wastefulness that is permitted in some offices is not only unpardonable in itself; but, in contrast with the rigid control usually exercised in the works in regard to the equivalent of stationery, such as cotton waste and oil, is enough to rouse resentment in the most philosophical workman. Perhaps the workman has little opportunity of making any effective comparison between office and works conditions; but the little he has is possibly supplemented by information from relatives employed in the offices; and what one workman knows, others soon learn.

It is sound practice that (subject perhaps to showing a conservative value for stock on hand) all stationery should be written off as it is purchased—that is, charged to an appropriate expense account or accounts—but it is equally desirable that memorandum stock accounts be kept in full orthodox fashion. Certain compromises are advisable to minimise the clerical work.

Each departmental head should be provided with facilities for holding in proper custody, say, a week's stationery requirements. Steel cupboards are excellent for this purpose. The departmental head would ordinarily draw a week's supply at a time from a central stationery stores, presumably joined with some busier stores. The weekly withdrawals from the central stores would be aggregated, say, every four weeks, and a memorandum debit notified to each department, and if thought desirable expense accounts adjusted accordingly. By having standardised lists of the regular stationery items and their cost prices (not too finely adjusted), it is not a serious matter to establish a general sense of responsibility for economy.

At the central stores, it will be desirable for each issue to be noted on a stores bin card or tag; and on each of these an ordering level should be indicated so that a purchase requisition for further supplies can be sent forward to the proper quarter.

With printed forms, this aspect of stationery stores control means much more than that of stationery economy only, as it is vital to maintaining a supply of the forms on which the daily routine depends.

A simple automatic method of preventing stocks of printed forms, in particular, from becoming exhausted unobserved, is, when receiving new supplies, to keep back in a specially

labelled parcel a quantity sufficient to meet requirements for the period necessary for obtaining replenishments.

FILING

Filing is commonly not recognised as being the major problem that in fact it is. This is probably because every office has some sort of filing system actually in use, and has by long familiarity with it become so accustomed to its limitations and shortcomings, that it hardly realises that they exist.

If an analytical mind is brought to bear upon an inadequate system of filing, it will be realised that the aggregate of time wasted in searching for buried information, and for information which in the end proves not to be in the files, is very considerable, and represents large sums of money.

For this reason, primarily, it is of the utmost importance that a scientific method should be applied to this problem, as to other problems in the office and the factory.

Before any method of filing can be adopted, however, an important question of policy has to be settled. This question is whether, and to what extent, central filing should be adopted. By central filing is meant the segregation of the whole of the filed records of a business within a special department devoted solely to the maintenance and control of the files. If this principle is adopted to its fullest extent, it involves the disappearance not only of departmental filing sections, but also even of the semi-private groups of files retained within the desks of both executives and clerks.

The advantages of such an arrangement must be fairly apparent. In the first place, the staff handling the files, being occupied wholly on such work, will quickly become experts, whereas each group of files in a diffused system is commonly dealt with by junior clerks in their spare time. One great advantage of this expertness is the non-retention of unimportant papers, which otherwise tend to collect in the files to the exclusion, or at least the risk of concealment, of the really important material. The second advantage of centralisation is the avoidance of duplication. A third, is the avoidance of the difficulty of deciding and remembering in which department the file on a particular subject shall be or is kept. A fourth advantage is the possibility of standard uniform methods, not only of actual physical filing, but also of cross-referencing,

allotting to files, etc., which are of the utmost importance when the files are to be used by persons other than those into whose ordinary routine they enter.

These advantages are such that only important considerations should be allowed to weigh against them, and it is not too much to say that it is rare for any considerations to exist which would justify the complete abandonment of the principle of central filing, although they may often cause it to be modified.

For example, in certain departments in every office there exist records which are created in, and used almost solely by, the departments in question. An example of this is the Purchase Invoices in the Purchases Section of the Accounts Department. It is rare for reference to be made to the files of Purchase Invoices by any persons outside the Accounts Department; and in such a case it might well be that the advantage of placing these files in the central pool would be more than outweighed by the disadvantage of not having the files ready to hand in the department where they are in constant use.

Similarly, records kept individually by clerks in their own desks may be of use to practically no one but the clerks in question, and their storage in desk files may therefore be justified. It should always be remembered, however, that the very inaccessibility of the file in the past may have prevented its coming into general use, or may have led to what is practically a duplicate being kept in someone else's desk. The retention of files in desks, therefore, should always be viewed with a certain amount of suspicion from the viewpoint of filing efficiency.

Even executive officers should be encouraged not to retain files. Confidential papers can safely be housed in locked confidential filing cabinets, access to which is limited to specified people. Even in the case of the most private documents, there are nearly always at least two or three people who have the right and need of reference to them, and for them central location is therefore an advantage; but in cases of special importance, or of frequent reference being necessary to such documents, the persons needing to make the references may with advantage have copies of the documents made (e.g. by Photostat) for their use.

Actual systems of filing are numerous, and cannot be

described here. The problem which all systems set out to solve is--first, how best to ensure that a desired document can readily be traced to the file in which it is located, and, secondly, how best to ensure that the required file can be picked out from the mass of files with the minimum of delay. The first part of the problem is easy or difficult of solution, according to whether the document in question is susceptible of filing under a single name or has to be filed under a "subject" heading. In the latter event complexities at once arise, as a single document may contain references to several subjects. A system of cross-referencing may be evolved to overcome this--or, alternatively, copies of the document may be prepared and placed on each subject file concerned.

The physical selection of a single file from the remainder is aided by the adoption of an ordered arrangement of the files in cabinets, or on shelves. Such an ordered arrangement may be based on the alphabetical order of the initial letters of the name on the files, or some arbitrary method of numbering the files, or on some combination of alphabetical and numerical methods.

There is a wide range of choice of methods available, many of which are the subject of special equipment manufactured by office equipment firms. There is, therefore, almost certain to be a best possible system already worked out and available for any particular business, and that best possible system should be eagerly sought by each office controller.

REPORTS

A great deal of the time of the more responsible personnel in any business undertaking is likely to be occupied with the study of reports submitted to them, and the preparation of reports to be submitted to others. No important decision by the Higher Management can, or at least should, be made without the most careful study of reports upon the problem by those within the organisation best qualified to express an opinion, or in a position to set down the data upon which an opinion may be based.

Unfortunately, it cannot be denied that the importance which attaches to reports is not, in general, reflected in the manner of their presentation. It is, for example, often possible to refer to a report prepared some months previously, without being able to decide precisely within what terms of reference

it was written. At the time of preparation no doubt the problem was generally appreciated, and introductory matter describing it seemed unnecessary. As a result, the value of the report has almost disappeared after a few months, when it could have been retained permanently.

Such an example leads inevitably to the conclusion that the preparation of reports, upon which future action and policy may be based, should be the subject of organisation at least as good as that granted to the routine by which the results of action and policy are recorded. It will therefore be profitable to consider some of the principles upon which a routine for report preparation should be based.

In the first instance, the number and character of reports habitually prepared in an office should be the subject of careful scrutiny, as also should the frequency with which reports are made. Reports fall, broadly, into two classes—regular and special—and it is particularly the former class to which attention should be paid, if the preparation of unnecessary material is to be avoided. The justification of a report, especially since it is almost always directed by its author to his seniors, lies in the extent to which it is read and subsequently referred to, and it is this feature which provides the criterion by which the regular report should in the first instance be judged. Discretion needs to be exercised, as far as possible, in distributing copies of reports to those only who can and will make use of them; although it may sometimes be politic partially or wholly to waive this test.

There are, of course, many border line cases, as for example where occasional reference is made to a regular report by a number of people. Another, and perhaps more frequent, example is where a report is prepared which in the opinion of its author demands study in certain departments; but in actual fact is never referred to. It may be, and often is, the case that the author has too high an opinion of his product, but, again, it quite often happens that the departments in question are not alive to the situation, and are not receptive of new ideas.

It is usually better, in cases of doubt, to err on the side of preparing too many reports rather than too few, but, even with that proviso in mind, there is no excuse for the multiplication of unnecessary documents which stand no chance of proving of practical value. It is therefore clear that the whole question

of what regular reports should be written is as much a subject for careful analysis as is any other branch of office work.

Special reports, written in connection with new problems arising in the course of business, may be expected to enjoy a greater likelihood of being considered carefully than regular reports. They are only likely to be written because a situation has arisen which calls for examination; and the very existence of that situation makes it probable that the reports will be read.

The actual form in which reports are to be set out should be carefully thought out and standardised. It is probable that a very large proportion of the many reports written, which never receive attention, suffer that fate because they do not present their conclusions clearly and concisely so that the reader can quickly see whether the report, as a whole, is worthy of his study.

To those whose business it is to prepare written reports, the following suggestions will prove of value in assisting the arrangement of material so as to convey the maximum impression to the reader, with the minimum of effort on his own part.

1. The size of paper used should be standard. Ordinary foolscap is a useful size, which is readily filed in standard filing cabinets. There should always be an adequate margin on the left-hand side of the paper for filing and noting purposes.

2. All reports should be dated. It is surprising how often this simple item is omitted from a report, and yet, in later months, the report may lose all significance if the precise date of its preparation is in doubt.

3. Every report should be headed with a title which should be carefully worded. It should describe as accurately as possible the subject matter and should at the same time, as far as possible, aid the placing of the report in its proper file by making use of, or reference to, a subject heading for which a file is already kept.

4. A special report should *always* be prefaced by a statement of the problem to be reviewed. One reason for this has already been given. Another is that such a statement indicates at once the writer's conception of the problem, and ensures that later arguments and conclusions are based upon premises which are known to, if not necessarily accepted by, the reader. In a purely regular report, which is merely an up-to-date re-state-

ment of earlier reports, there may not, however, be the same necessity for this definition of the problem—and indeed there may be no problem to define, as the report may be only a periodical statement of observed facts. Even in this field, however, the report writer, when an opportunity occurs for a discussion of a new topic or a new aspect of an old topic, should always bear in mind the value of "stating the problem," or, in other words, of declaring the terms of reference of the report he is writing.

5. The opening section of a report should, whenever practicable, be a summary of the conclusions arrived at. It should not be necessary for the whole report to be read before an opinion can be formed whether the conclusions arrived at are important, and therefore there should be no hesitation in putting these conclusions at the head of the report. If the author feels that thereby his arguments are in danger of not being studied, he has his consolation in the fact that if his conclusions are accepted, without reference to his explanation of how he reached them, confidence in his judgment must be high. If, conversely, they are rejected without examination of the argument, the prejudice so disclosed will probably be proof against accepting any unwelcome conclusions, however strongly supported by evidence.

6. The paragraphs of a report should be numbered. This simple rule ensures the maximum convenience for the reader, when he is referred back in the report to an earlier argument, or when, in discussing or writing about the report, he wishes to refer to particular points. Also, cross-headings are helpful if they are short, clear and pertinent.

7. The utmost attention should be paid to the use of simple and correct English. It often happens that men with marked ability in their usual work fail lamentably to do justice to themselves in their reports through poor English and bad presentation of their case. Unwittingly they damage their reputation. The habit should be deliberately cultivated of referring to a standard text-book * on the use of English when the construction of a sentence or the turning of a phrase is in some doubt, and there must be many reports written daily, which would have gained added emphasis and greater authority, had such references been made during their compilation.

* Such as *The English Way*,²³ and *Modern English Usage*.¹⁴

8. Many reports are essentially concerned with the estimating of the financial effect of certain proposals. There will usually be several separate considerations entering into the final estimate, and a section of the report will be devoted to each. In such cases, it is sound practice to leave a margin on the right-hand side of each page, and to show in this margin, opposite either the beginning or the end of each such section, the estimated figure arrived at as a result of the arguments contained in that section. In this way the reader can readily select the most important sections for first study and criticism, and another step is taken towards capturing his attention rapidly.

9. The presentation of statistics and/or graphs within a report requires special consideration. When graphs are used, the fact that the method of reproducing them is different from the ordinary method of reproducing words and figures usually dictates that they should be inserted at the end of the report; but if they are essential to the argument and not merely illustrative this position is a disadvantage which, if feasible, should be avoided. With statistical tables, the principle should be adopted that such figures as form part of the argument should appear in the text in the appropriate place. Other figures further illustrative of the argument, of general interest, or representing the context from which the figures, vital to the argument, have been extracted, should be ruthlessly consigned to the end. The principle, of course, is once more that nothing should be allowed to divert the reader's mind from a quick grasp of the essentials of the report; so that, on the one hand, he should not be forced to turn for essential figures to the end, and, on the other, he should not be distracted by the obtrusion of unessential figures. In continuation of this principle, where possible only summarised tables of statistics should be included in the text, details being shown at the end.

CONDUCT OF MEETINGS

The conduct of statutory meetings required under the Companies Act is a technical matter for the Company Secretary, hardly falling within the range of the student's interest at this stage. Staff meetings are in a different category, as they may be convened for all sorts of purposes, and need not be confined

to the senior staff. It is convenient to think of them as expressions of the office function.

A reference to staff conferences is made in the section on Division of Functions in Vol. II, where emphasis is placed on the importance of the Chairman taking personal responsibility for decisions. In an ordinary committee, where each member has equal voting rights, the Chairman's responsibility is essentially to bring to a focus the views of the committee as a whole, and not to use his position to force on it his own views. He may sometimes be in a position to do the latter when, owing to a tie in the voting, he exercises a casting vote. Even then, he does not necessarily vote in support of his own opinion on the subject at issue. His judgment as Chairman may be that, with a Committee so divided in its views, positive action may be premature, and he may therefore decide to use his casting vote to delay action until the committee is more united. The general practice (except perhaps in Shareholders' meetings), is rarely to take action except on a clear majority vote; and even in Shareholders' meetings precaution is taken to require for major decisions a preponderating majority, such as, say, two-thirds.

Staff and other conferences, committees, etc., are essentially a mechanism of co-operation, and cannot serve their object on a basis of voting rights. Beyond that, the membership of such meetings may easily be such as to make it dangerous to accord equal voting rights. For example, in a conference of the Heads of the Sales, Production and Finance Departments relative to, say, a spare part policy, each will see the problem differently and, left to his individual judgment, might press for embarrassing decisions. The function of the Chairman (presumed to be without departmental bias) is to compose conflicting views so far as he can, but certainly to hear all responsible views, and to see that they are fairly recorded for reference, if need be, on some later occasion. Ultimately the Chairman, if he has the power, should give a considered judgment with the impartiality of a Court Judge, and, when the circumstances seem to call for it, in writing. Minutes, reduced to essentials, of a conference operated in this spirit should be a real contribution to establishing genuine co-operation amongst the senior staff, and establishing co-ordination between them and the Board of Directors.

Obviously, these methods tend to require from each member

of any conference a continuous demonstration of administrative skill in arriving at his recommendations; and, where major issues are at stake, a Chairman desirous of getting the maximum help from departmental experts may reasonably call on those having definite views to put forward, to draw up memoranda accordingly for supplementing the minutes of the conference itself.

It is for such reasons that the technique of drafting reports should be cultivated early in a business career. Except reports are properly drawn, they will fail to convince through inadequacy or faulty emphasis, or through diffuseness—resulting in inability on the part of those to whom the report is addressed to “see the wood for the trees.”

Although the individual attitude of those attending a conference must always be the main factor in its success, good intentions are likely to be the more effective in conjunction with appropriate organisation before and after the meetings themselves. In this field the “Secretariat” should render important service. So much is this so, that the success of all conferences may be said to hinge first on the Chairman and secondly on the Secretary, and particularly on their collaboration outside the meetings.

Of this collaboration the first expression is the Agenda, which may be likened to a working drawing in its possibilities of control. The problems attaching to drawing up an Agenda are the subject matters to be dealt with, so that nothing essential shall be forgotten, and the order of the discussion. The onus of keeping to an agenda rests on the Chairman, and not all chairmen consider seriously this aspect of their duties, however important it may be.

The liability of discussion to stray from the nominal point of issue is very real; but insistence by the Chairman on a rigid adherence might not be always politic, however sound. For this reason, the drafting of an agenda should pay regard to the personnel of the conference, and the latitude contemplated by the Chairman.

The best form of agenda control is to draft recommendations and submit them, with skilfully prepared supporting memoranda, to the members of the conference before the meeting. As to the trouble and self-discipline this involves on the part of the person submitting the recommendation, it can reasonably

be held that, except proper preparation is made, no conference justifies the time occupied, and further, that conferences which do not amply justify themselves are worse than none at all.

The more informal conferences, such as a works manager may hold daily or weekly with his foremen or supervisors, might defeat their object if either agenda or minutes were attempted seriously. If, however, such meetings are found to serve a useful purpose, they should incidentally inspire the works manager to circulate some sort of memorandum to the supervisors after each meeting. Except some evidence is shown of useful instructions and advice resulting from the meetings (that otherwise would not have been issued), they will have a weakening effect generally; and, with everyone's memory so proverbially short, will come to be ridiculed throughout the organisation as either a waste of time or a reflection on the works manager's ability to manage.

The student would do well to read in full, and not merely refer to, a short but excellent treatise on *Office Organisation and Practice*⁶ published by British Standards Institution in the series *Booklets on Office Aid to the Factory* (B.S. 1100, part 10).

CHAPTER X

STATISTICS AND GRAPHS: CONTROL

Statistical data may sometimes be only roughly accurate, and deductions made therefrom in terms, say, of averages may be also but rough (by a mathematical standard) and yet may be invaluable as indicators of the trend of events. Perhaps the larger purpose of statistics, apart from special aspects, is to assist the statistician to read something of the future. His vision may be very restricted, or for the lack of adequate data it may be blurred, but at least it is being used in the right direction. Of course it is possible to make fallacious deductions from the available data, but (apart from erroneous method) the usual cause of misleading deduction is insufficient data—to use a statistical expression the "sample" taken is inadequate either in character or extent, or in both. The administrator and the statistician, however, are concerned with the present as well as the future. The present, in relation to the past, is the key to the future; and it is an important part of the work of the statistician to illustrate the present and the past both prosaically by statistical tables and pictorially by graphs or charts, from which the experienced administrator may draw the necessary inferences, and take the required action issuing in beneficial development of the industrial undertaking.

STATISTICS, as a science, is concerned with the study of measurements or aggregates of phenomena. Although the information upon which it operates may be precise, and for all practical purposes accurate, the deductions drawn from the information tend to be in the nature of approximations or tendencies.

For instance, the mortality statistics used by the actuary, who is a specialist statistician, are of a remarkable accuracy; and the expectation of life at which he arrives, for purposes of computing life insurance premiums, represents a very close approximation to what will happen, in that regard, to individuals in the mass. While one individual may live to a hundred and another die at twenty, an average "expectation of life" (or more scientifically expressed, a "mean after-life time")

for each particular age) can be worked out to an exact figure and the premiums payable for stated benefits at death be worked out precisely ; but, obviously, dependence is placed on enough people living beyond the expected or average age to counter-balance those who do not reach the age ; in other words, on probabilities deduced from past experience. It is impossible for a deduction based on such a balance of probabilities to be absolutely accurate, and the actuary has therefore to allow for a certain margin of error.

Another illustration of the process of deduction is the use by statisticians of data pertaining to trade, with a view to discovering the trend of economic events. This is a field in which forecasting is peculiarly difficult, as there are so many conflicting influences which must be separately recognised and evaluated, in so far as they are calculable.

STATISTICAL METHOD

The space available makes it impossible to do more than discuss here one or two of the fundamental principles of statistical method ; and the student is referred, for more complete and more detailed description, to such manuals as Prof. A. L. Bowley's *Elementary Manual of Statistics*,³ and L. R. Connor's *Statistics in Theory and Practice*.⁷

In essence all statistical method is, as has already been suggested, directed towards the drawing of deductions from tabulated data ; and, since such data are numerical, it follows that statistical deductions are founded upon the mathematical relationships which are discoverable between the various figures recorded—in brief, upon comparison.

Comparison may be direct and simple, as, for example, when various items are compared as percentages of a total, or when the averages of several groups of figures are compared. Or it may be more indirect, for the purpose of discovering a trend over a period of time ; when each comparison made has importance, not so much by itself, as by the extent to which it does or does not confirm other comparisons made in the same series of observations.

The simplest tools by which direct comparisons are made are percentages, averages, and index-numbers ; the simplest tool for the determination of trends is the graph or chart.

Percentages.—It is hardly necessary to devote space to

the description of the method of calculating percentages, but the opportunity must not be missed of emphasising very strongly the value of using percentages in conjunction with statistical data wherever possible. Broadly speaking, it is safe to say that, in carrying out a general investigation into any set of figures to be used for administrative purposes, the first step, whenever practicable, should be to express them in percentage form.

Averages.—Under the general heading of averages must be considered not only simple and weighted Arithmetic Averages, but also Medians and Modes; in other words, the series of mathematical conceptions which endeavour to express in a single figure the essence of a series of figures.

“The Arithmetic Average is the sum of the value of the items concerned divided by their number, *i.e.* the ‘average’ of common speech.”⁷ This average may be:

- (a) a *simple average* in which each item is counted once only, *i.e.* of equal significance with every other item, or
- (b) a *weighted average* in which each item is assigned a “weight” proportional to its importance in the group of items under consideration.

A simple illustration of the distinction between these two averages can be found in almost any stock account, where it is desired to know the average (or mean) purchase price. Suppose five purchases of cotton yarn of a certain grade at the prices indicated below.

	Cotton Yarn Purchases.	Price per lb. <i>d.</i>	Total Purchase Cost, <i>d.</i>
Nov.	1,500 lbs.	24.80	37,200
Mar.	2,000 „	23.39	46,780
July	3,000 „	23.27	69,710
Aug.	6,000 „	21.06	126,360
Oct.	4,000 „	20.64	82,560
Total . .	16,500 lbs.	113.16	362,610

Total Prices. 113.16 <i>d.</i>	No. of Purchases. 5	“Simple” Average 22.63 <i>d.</i>
Total Purchase Cost. 362,610 <i>d.</i>	No. of lbs. Purchased. 16,500 lbs.	“Weighted” Average Price per lb. 21.37 <i>d.</i>

A simple average would be reached by taking an average of these prices, without regard to the quantity purchased at each price. A weighted average, on the other hand, would take into account the quantities; in other words, the total purchase cost of all the purchases divided by the number of lbs. would give the "weighted" price per lb.

Both averages are mathematically accurate, but the choice of which should be used must depend on the purpose for which the information is required. For the purpose mentioned it would be the weighted average only that would have any real significance.

The simple average would, however, represent the average market price of the cotton yarn.

Mode, Median and Quartiles.—Although the principal object of an average is to typify in a single figure the characteristics of a whole series of figures, it is quite easy to imagine cases where an ordinary weighted average does not fully achieve this object. An everyday example is where it is desired to determine the "average" size of family, in the sense that it is desired to know how many children would probably be found in the majority of families. If the average number of persons per family were actually calculated on ordinary methods of averaging, it would probably be found to be a fractional number such as 3.46 (the average for all families in London County), which is an arithmetical conception only, obviously having no actual existence.

In point of fact, in round figures, out of every hundred families in London—

13	comprise one person only
24	,, two persons ,,
22	,, three „ „
17	,, four „ „
24	,, five or more persons.

Thus, over half (59%) are below the average number, and therefore the rest must be considerably above the average.

So that in certain series of figures, especially those containing a relatively small number of very high or very low values, the average, as calculated, may not very closely coincide with the "normal," "typical," or most representative figure.

For this reason, statisticians often make use of two other

devices for selecting the "typical" figure—the Mode and the Median. Each of these has its own advantages and disadvantages and requires separate description. They share, however, this characteristic, that in ordinary commercial statistics they are not employed to the extent that they should be, in modifying or amplifying the results of mathematical averages.

The Mode may be defined as the value in a series at which the greatest number of cases is observed.

In a series of figures such as that shown on p. 251 the Mode can be selected at a glance, but it should be borne in mind that accurate selection of the Mode is often a matter of some difficulty. This is because the values quoted in a series are often not clear cut; that is to say, they are grouped values in the sense that they include cases showing small variations on either side of the quoted values.

The solution, of course, lies in breaking down the series into the narrowest possible variations and at the last stage selecting the Mode by inspection.

The advantages of the Mode have been clearly put by Professor A. L. Bowley ⁴ as follows: "Whereas the Arithmetic Mean and the Median (defined below) may correspond to no reality, but be merely numerical conceptions, the Mode is precisely that number for which most instances can be found. It shows the commonest result, that most often obtained, and is of very general application. The Mode, rather than the average, in chest measurements is the number most suitable for the ready-made clothing manufacturer."

Variations in the Mode over a period will show what has been happening to the largest group of people or things during the period, whereas the averages over the period will be affected by compensating or exaggerating changes amongst more exceptional cases.

The Mode, however, has the disadvantage that it is not always equally useful, and is definitely valueless, or even indeterminable, in certain series of figures, such as those where cases are numerous at all, or at the majority of, values, and where, therefore, no one value is definitely more typical than another. Such series are, of course, common.

The Median is the name given to that value, in a series that have been ranked in order of magnitude of the measurement

under consideration, which occupies a position above which half the cases occur, and below which half the cases occur—i.e. it is the value of the middle case. Thus if, in a series of purchases ranked in order of price, 20 tons of coal are bought at prices above 30s., one ton at 30s. and 20 tons at prices below 30s., then the Median is 30s.

The Median is thus another device for typifying a series in a single number which is independent of extreme variations at either end of the series. Thus it is immaterial to the value of the Median quoted above, whether the range of prices above 30s. extends to say 100s. or only to 35s.

This feature indicates a special value of the Median—it can be used where the precise value of the upper or lower cases in a series is unknown. Thus if, in an abstract of wages payments, no details of wages below 15s. a week were given except the number earning less than that amount, a Median can be calculated, but an average cannot—except upon an arbitrary assumption as to the average wage below 15s.—and a Mode cannot unless the highest single reading above 15s. exceeds the total of cases below 15s., so that the Mode itself will be above 15s.

Because of the difficulties outlined in calculating the Mode when the values under review are not clear cut, the Median may be both simpler and more definite in position than the Mode; and its advantages, for certain purposes, over the Average are similar to those of the Mode with the addition of the special advantage noted above.

On the other hand, the Median is very artificial, and may easily be a value of no real importance of itself, as, for example, where there are in a series two values which together represent the bulk of the cases. In such circumstances the median would certainly lie somewhere between these two values, and this intermediate value would be one of no individual significance whatever, and might therefore easily convey a misleading impression of the whole series.

The best use of the Median is thus in a series where there are a few extreme cases, which it is desired to ignore, and where the middle values are more or less well and evenly represented.

Quartiles are evaluated by the same method as the Median, the first Quartile being the value of the case midway between

the top of the series and the Median, and the second Quartile being the value of the case midway between the Median and the bottom of a series.

An interesting illustration of the foregoing devices can be obtained from the statistics of motor cars, as in the table below, where it is desired to know the horsepower of the most popular and typical car used in this country in the year under review.

CENSUS OF PRIVATE MOTOR CARS *—30TH SEPT., 1930,
IN GREAT BRITAIN

(Cars for which licences were current at any time during the
quarter)

	Horse Power.	Number of Cars.		Total Horse Power.
		By H.P. Classes.	Cumulative No.	
	1	2	3	4
Total .	1,210	1,056,111		13,996,957
Middle Zone	1-6 (3)	121	121	363
	7	19,016	19,137	133,112
	8	150,663	169,800	1,205,304
	9	53,281	223,081	479,529
	10	55,738	278,819	557,380
	11	60,796	339,615	668,756
	12	261,076	600,691	3,132,912
	13	75,924	676,615	987,012
	14	114,857	791,472	1,607,998
	15	45,768	837,240	686,520
	16	65,701	902,941	1,051,216
	17	7,987	910,928	135,779
	18	26,908	937,836	484,344
	19	12,515	950,351	237,785
	20	16,299	966,650	325,980
25 & over	21	15,620	982,270	328,020
	22	11,131	993,401	244,882
	23	13,672	1,007,073	314,456
	24	18,353	1,025,426	440,472
	25 & over	30,685	1,056,111	975,137

* Excluding electrically-propelled cars (103 in number).

Inspection will show that the Mode is 12 H.P. To arrive at the Median it is necessary to know the total number of cars of all sizes (1,056,111) and then to see in which H.P. class the middle case (the 528,055th car) occurs. To discover this, it is necessary to set down the cumulative total of cars, class by class. This is shown in the table, and the 528,055th car will be seen to

occur in the 12 H.P. Class. So that in this illustration the Mode and Median indicate the same value.

The Quartiles will be the middle case in each of the halves—the lower quartile will be the 264,058th car (occurring in the 10 H.P. Class), and the upper quartile will be the 792,114th car (occurring in the 15 H.P. Class). Along these lines it is shown that the typical British Car in that year was 12 H.P. (accounting for 24.72% of the total) and that the middle zone, as it may be called, ranged from 10 H.P. to 15 H.P. inclusive and accounted for 58.15% of the total.

In contrast with these methods, the "weighted" average H.P. obtained by dividing the total H.P. of all the cars (13,996,957) by the total number of cars (1,056,111) is 13.25 H.P. There is, as it happens, no car listed of this H.P., and to take the nearest size, 13 H.P., would be clearly misleading as to the typical size of car, seeing that, of the total number of cars, only 75,924, or 7.19%, are of this size.

Index Numbers.—"An index number is a device for estimating the relative movements of a statistical variable in cases where measurement of actual movements is inconvenient or impossible."⁷

In official statistics a very common application of index-numbers (or indices) is for comparing price levels, from time to time, with the price level in a selected base year which is given the value of 100. When an attempt is to be made to compare, say, the general level of wholesale prices at a given date with the general level of wholesale prices at another given date, it is evident that it is beyond the powers of any statistician to take into account every price which is being charged for every commodity at the given date. What has to be done is to select certain commodities which, by reason of their absolute or relative importance, or because they are important constituents in the manufacture of other commodities, are considered representative of price movements of commodities as a whole.

These selected commodities are not, of course, each of equal importance, and a degree of importance, or weight, must be assessed for and allocated to each on some logical basis. When this has been done it is possible to compute a weighted average of the wholesale prices of the group of selected commodities at the two dates, and to express the two comparable

averages as index numbers—the average price for the one date being expressed as 100 and the average price at the other date being expressed as another number indicating the percentage relationship of the latter to the former average.

The Index Number method is of the greatest value in dealing with all sorts of movement in any appropriate unit of measurement. An application of fairly recent development, in the form of a Board of Trade Index Number of Industrial Production,¹⁵ is of special interest to students. In this case 1924, the date of the Third Census of Production, is used as the base year.

FIG. 22.—INDEX OF PRODUCTION (1924 = 100)

Group.	Year 1930.	Year 1931.	Year 1932.
1. Mines and Quarries	91.3	81.6	77.5
2. Iron and Steel and manufactures thereof	88.8	65.9	66.2
3. Non-ferrous Metals	119.1	100.1	96.3
4. Engineering and Shipbuilding	116.6	94.9	88.0
5. Textiles	79.5	77.0	85.1
6. Chemical and Allied Trades	99.3	95.2	97.7
7. Leather and Boots and Shoes	101.4	99.3	96.4
8. Food, Drink and Tobacco	104.9	103.7	97.6
9. Gas and Electricity	138.7	142.4	146.1
<i>Av. Total of Manufacturing Industries (2-9)*</i>	106.1	96.7	97.0
<i>Av. Total of all groups (1-9) *</i> . . .	103.2	93.7	93.1

* Includes also various industries not specified above.

The official explanatory note runs as follows :

The method adopted in compiling the indices has been to compare the best available figures, measuring the volume of production in each industry in the periods shown with the corresponding figures for 1924. The indices of activity thus obtained for the different branches of trade number about 60. They have been combined so as to form indices of activity for the leading groups of industries and for industry as a whole. The "weighting" principle adopted in combining the individual indices has been to assign to each its relative importance as measured by the "net output" (i.e. the value added in production or manufacture to the materials used), as ascertained in the 1924 Census of Production.

tion. The indices may thus be said to represent the variations in the volume of net output as compared with 1924.

The information from which the indices have been constructed has been obtained from voluntary returns furnished by trade associations and by individual firms, from official returns of imports and exports, of wages paid and of production, from the bulletins of certain industrial federations, and from trade papers in which production and movement in stocks are shown.

In addition to the group of industries enumerated in the table, particulars of rubber manufactures, cement and tiles are included in the calculation of the general index.

The sections of industry which are covered by the information at present received represent about 90 per cent. of the total activity of the groups of industry set out in the table, and more than two-thirds of the total manufacturing and mining activity of Great Britain and Northern Ireland, as ascertained in the 1924 Census of Production. Of the branches of trade not covered by the data summarised in the table, the most important are the building and contracting trades (with the exception of the output of cement and tiles, for which particulars are included in the general index), and public utility services other than gas and electricity.

*Board of Trade Journal.*¹⁵

PUBLISHED STATISTICS

It is usual to classify as official all statistics collected or circulated by a Government Department at home or abroad. There are other statistics, not necessarily less well authenticated, issued by organisations having no governmental connection. The figures furnished by members of the Incorporated Association of Retail Distributors, and assembled in a particular form by the Bank of England for publication in the *Board of Trade Journal*¹² provide an illustration. The circumstances of their publication give them an official standing; but no Government Department, nor even the Bank of England, accepts responsibility for their accuracy. All the Bank does is to guarantee the accurate assembly or application of the data supplied, but not the accuracy of the original data, which are supplied voluntarily, and not under the legal compulsion that attaches to the basic records of practically all strictly official statistics.

The user of published statistics must have regard to the channel of publication as the main guarantee of accuracy. For instance, the Bank of England, in the case cited, would not be likely to assemble any data unless it had ample assurance of their accuracy, although coming from a strictly private source. Usually private statistics are dependent for their acceptability, in any public connection, upon certification by qualified professional accountants.

The particular return mentioned above for purposes of illustration shows the percentage change in trade compared with the same period a year previously. There is no disclosure of amounts and possibly only the larger retail distributors send in figures; but the percentage changes cover a sufficiently representative proportion of the whole country's trade to give a valuable indication of economic conditions, without having a complete mathematical accuracy, comparable, say, with the mortality returns mentioned earlier.

The range of official statistics is so wide that only a small selection can be brought to the notice of the student at this stage (a *Guide to Current Official Statistics*¹⁹ and a *Monthly Digest*²⁴ are issued by H.M. Stationery Office). The selection can moreover be confined conveniently to those of obvious application in the administration of an industrial undertaking. Some of these are drawn upon in other chapters and need only to be named here.

The statistics of overseas trade, *i.e.* imports and exports, are referred to in explaining the Balance of Trade. These statistics are of great moment nationally, and are significant in varying degree to individual businesses. It is difficult, in fact, to conceive any manufacturing business not interested in the figures either of imports of raw material as used in the business (or of manufactured goods to be competed with), or of exports of manufactured goods to which the business may, or may not, be contributing its due share. The classification adopted in the Board of Trade monthly returns is less detailed than in the annual returns, but the trends of trade as disclosed by the figures published each month are likely to be helpful.

Indicators of trade conditions outside each business's own experience are to be sought after, to provide the right stimulus in regard to buying and selling. This applies equally to home

trade and to overseas trade. Obviously, proper interpretation of overseas trade statistics calls for other evidence of the economic conditions in the respective overseas countries. This information may be derived in large part from the *Department of Overseas Trade Reports*¹⁷ issued annually for the more important countries, and at rather longer intervals for the others. British manufacturers are supplied also on request with special information, not otherwise published, and can obtain most valuable advice on their own particular problems.

In the Home Market there has been a great lack of direct trade information, but the monthly indices of production published by the Board of Trade on the one hand, and the returns of retail trade, as referred to earlier, go some way to fill in the gap as to general business activity.

The monthly returns²² by the Ministry of Labour of unemployment of insured persons by industries afford another valuable indicator. These returns can be applied to give the approximate number of employed insured persons.

The corresponding monthly figures²³ of unemployment and employment for over 700 separate towns or, more literally, employment exchange areas, identified with particular towns, and by counties are available for a special subscription. These are of particular use to businesses distributing "retail" goods nationally and concerned to know of any changes in local economic conditions. Such information indicates the general local effects of trade changes, though more particularised information is desirable in addition for most businesses.

The distribution of buying power in the home market is obviously of considerable importance in the proper direction of marketing efforts. The main indicators of particular use for this purpose are referred to in Chapter VIII.*

INTERNAL STATISTICS

The object of keeping statistical records within a business is, in the first instance, partly to supplement and partly to explain the financial accounts for the purpose of achieving better administration.

If the main feature of statistics, namely "comparison," is borne in mind, it will be realised that, unless statistical records are kept, all sorts of situations will arise which, being

* See p. 183.

capable of explanation only in terms of, or by comparison with, earlier situations, will become isolated phenomena which cannot be adequately guarded against in the future. But beyond their use as records for reference when required, statistics should have a more positive function—they should provide the basis for forecasting the future. The most that can be done in the way of forecasting is, of course, to examine the trend of past records, and to base deductions upon this trend, making whatever modifications may seem necessary on account of new influences which, it can be seen, are likely to upset the probable trend operative during the future period under consideration.

From these considerations certain main principles emerge. Statistical records should be adequate and should cover all aspects of the business, especially those where efforts made by the firm itself can have effect upon the results. On the other hand, the temptation to keep records which are never likely to be of practical value should be avoided, nor should records which are themselves necessary in a consolidated form be kept in unnecessary detail.

The next point is the need for simplicity and clarity. It must not be made impossible to see the wood for the trees and, for the sake of future ramblers in the same country, the name of the wood must be clearly stated. In order that observations made over a period of years should be on a consistent basis it is desirable, so far as this is practicable, and so far as no new factor has arisen, that the format of the record and the actual method of computation of each figure should remain unchanged. In presenting statistical reports it should be borne in mind that the Higher Management is not interested so much in the original detailed data on which a deduction is based as in the deduction itself. Summarised figures only should therefore enter into any report—details, if required, being given as an appendix.

There may be particular statistical records which, although very necessary, require reporting on only when some abnormality is observed. The danger of regular reports, except upon matters so vital that they create their own interest and demand study accordingly, is that the very fact of constant repetition tends to cause them to fall into neglect and cease to be read; and then, when abnormality arises, the report upon it may not

receive attention. Considerable discretion should therefore be exercised in the choice of matters upon which regular reports should be made.

GRAPHS AND THEIR USE

Graphical measurement may be as individual in its application as that of the temperature of an invalid, or as general as, say, the bank rate. A graph showing variations in amount is conveniently drawn or plotted on what is called a chart field, such as that provided by squared paper, giving ready means of measurement and regularity of lay-out. The graph on its field is a chart, and one chart may carry several graphs.

The chart field may be either divided in equal scales both vertically and horizontally, that is in squares, or the horizontal scale may be divided equally, and the vertical scale in logarithmic measurements. The latter field is known as "semi-log" because the logarithmic division is applied to the vertical scale only. For very special purposes fields are used with logarithmic scales in the horizontal direction also. The characteristic of the semi-log chart (or, to give it its better name, Rate-of-Change chart) is that, if two series of amounts are plotted on the chart, the resulting graphs will indicate truly the comparative rate of change of each series. Thus, the line representing a fall in amount from 10,000 to 9,000 will have the same slope as one representing a fall from 70 to 63, both rates of change being a decrease of 10 per cent. If plotted on ordinary squared paper the two graphs would correctly indicate the amount of change in each case, but the percentage decrease relationship would not be apparent, the difference in actual amounts of the two decreases (1,000 and 7) being so great. This use, to give a true comparison of rate-of-change as between two different sets of figures, is the chief value of this type of chart, although its application to a single graph is frequently of great assistance in getting figures in right focus.*

The horizontal divisions of charts are mostly used for time periods, but equally may serve for spacing out another basis of measurement during the same period of time.

In *Business Charts*³⁴ by T. G. Rose, to which the student is referred for a fuller treatment than is possible here,

* See p. 263.

a number of rules on chart preparation are given. Some of these are restated below.

- (1) Use standard size sheets such as quarto or foolscap with ample margins round the field or grid.
- (2) When dealing with time and another variable, always lay out the time period horizontally and the other variable vertically.
- (3) The horizontal scale should read from left to right and the vertical scale from bottom to top.

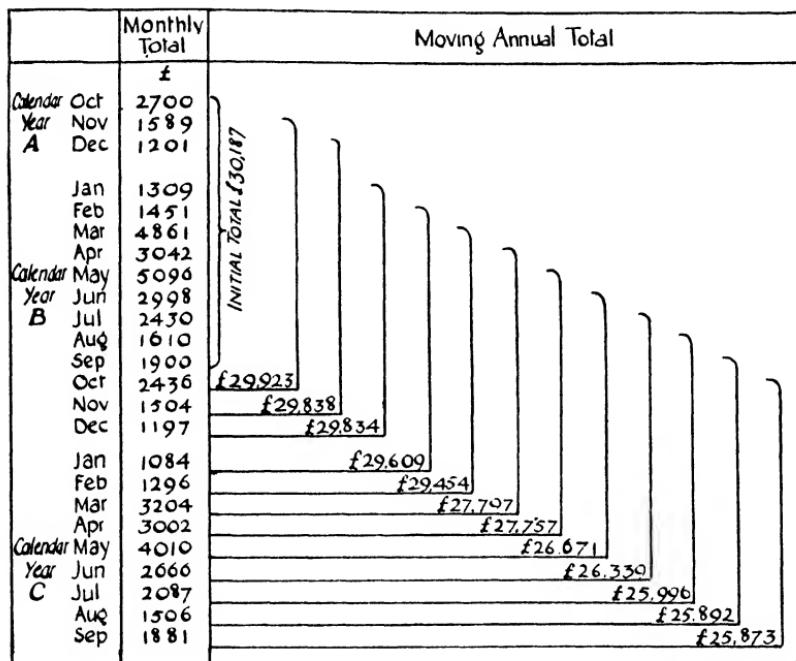


FIG. 23.

(4) The vertical scale should be selected so that the zero line will appear on the chart; otherwise the optical effect may be misleading.

(5) The graph lines should be sharply distinguished from the ruling of the chart field.

(6) Whenever a chart is made, the figures from which it is made must be shown clearly upon the chart itself.

(7) Figures for the scale of a diagram should be placed for the vertical scale on the left (and sometimes repeated at the right), and for the horizontal scale at the bottom.

(8) The title of the chart should be made as clear and complete as possible.

(9) Whenever possible, indicate by a coloured or dotted line on the chart the course with which the recorded results or measurements can usefully be compared, such as the desired results and/or previous results.

(10) Do not put more than two or possibly three graphs on one field, unless each is in a separate part and does not interfere with the others. Graphs representing facts which have no relation to each other should never be shown on the same sheet.

Before proceeding to indicate specific application of graphs it is necessary to make clear what is meant by a cumulative total and by a moving annual total.

A *cumulative total* is a progressive total of the results of successive periods; *e.g.* supposing the financial year of any company to start with April, the cumulative total at the end of May will be the sum of April and May; at the end of June, the sum of April, May and June; and so on, until at the end of the following March the year's total is reached.

A *moving annual total* (M.A.T.) is obtained by adding the total of the current month to the total of the previous twelve months and subtracting the total of the corresponding month of the previous year. In commencing the graph, the twelve-months total as at that date is plotted, then a month later a new twelve-months total is plotted, being arrived at by the addition of the new month's total and the deduction of the total for the corresponding month in the previous year. The procedure is indicated in diagram form in Fig. 23.

The utility of the moving annual total is that the trend of results is indicated, purely seasonal variations are eliminated, and the rise or fall in the latest month's figure is shown in its effect on a year's results.

Amount of Change Charts.—Charts which serve to contrast different amounts (whether of values, or quantity) are called amount-of-change charts, to distinguish them from rate-of-change charts, which were a later development.

Amounts can be expressed as bars, drawn to scale as to length, or as points, plotted on a squared field at scaled distances from a base line. When these points are connected by a line, the result is called a line graph.

Line graphs, with a little practice, are as easy to follow as bar

AVERAGE NUMBER OF PERSONS EMPLOYED IN FACTORIES
*(not including Mines, Railways, Shipping, Docks, and
 Constructional Works) IN GREAT BRITAIN—1921 TO 1930*

1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
5,218,311	5,103,240	5,318,658	5,289,978	5,531,322					
5,119,388	5,242,521	5,207,735	5,455,652	5,286,176					

No. of Compensation Cases (Industrial Accidents and Diseases) shown on chart
 by black bars

136,979	170,843	209,256	196,537	240,605
139,875	201,857	184,420	204,725	195,887

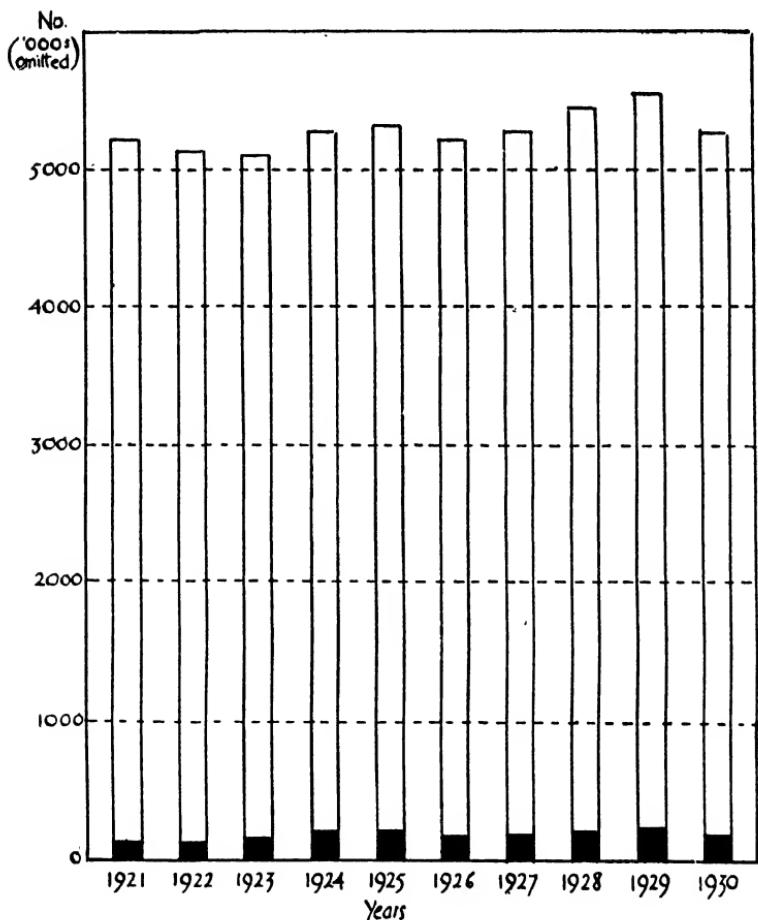


FIG. 24.

**TOTAL WORKMEN'S COMPENSATION FOR INDUSTRIAL ACCIDENTS
AND DISEASES IN FACTORIES (not including Mines, Railways,
Shipping, Docks, and Constructional Works) IN GREAT
BRITAIN—1921 to 1930**

1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
£2,463,782	£2,387,417	£2,288,580	£2,270,213	£2,407,346					
£2,241,336	£2,254,465	£2,249,583	£2,360,982	£2,338,679					

CASES (Number)

136,979	170,843	209,256	196,537	240,605
139,875	201,857	184,420	204,725	195,887

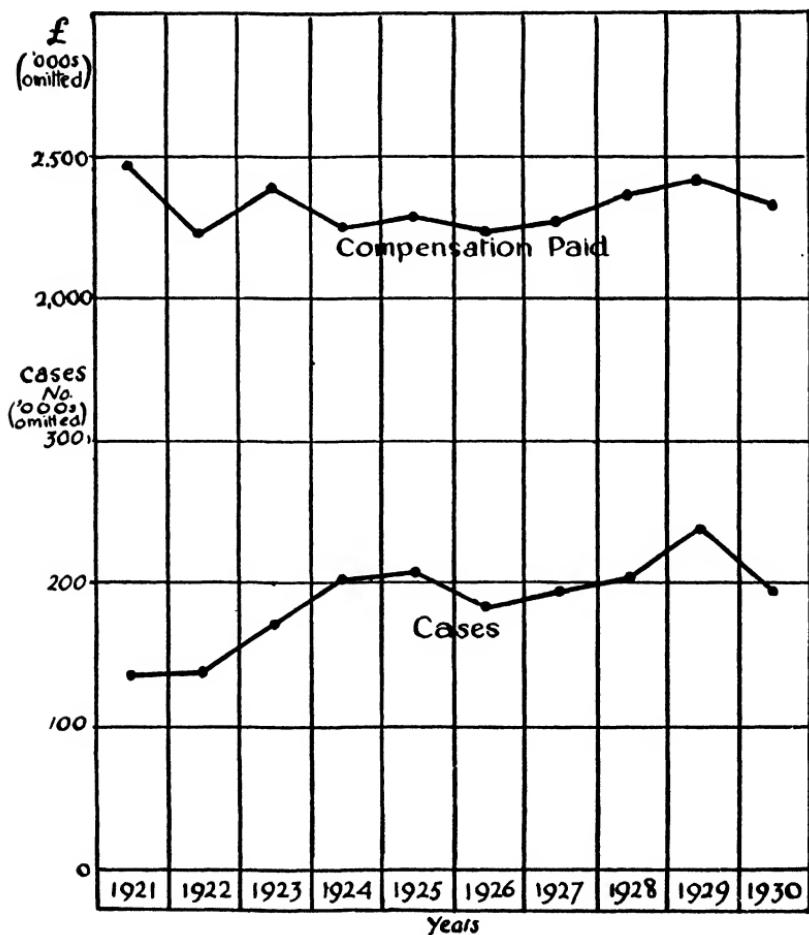


FIG. 25.

graphs, and have a wider range of usefulness. They are also easier to prepare.

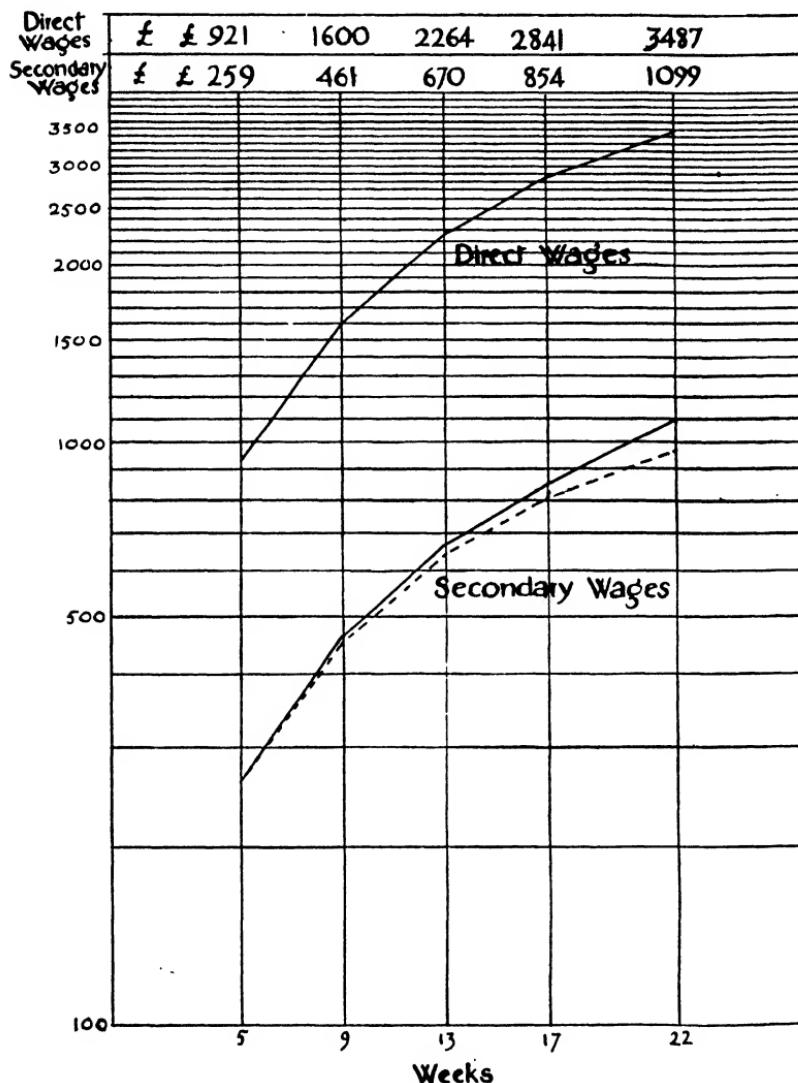


FIG. 26.—RATE-OF-CHANGE CHART.

Bar graphs are illustrated in Fig. 24, and line graphs in Fig. 25. The latter example employs two graphs to different scales. This combination of scales must be employed with discretion, lest the net optical effect should be confusing.

Rate-of-Change Charts.—The rate-of-change chart, already referred to, may be used wherever it is desired to observe

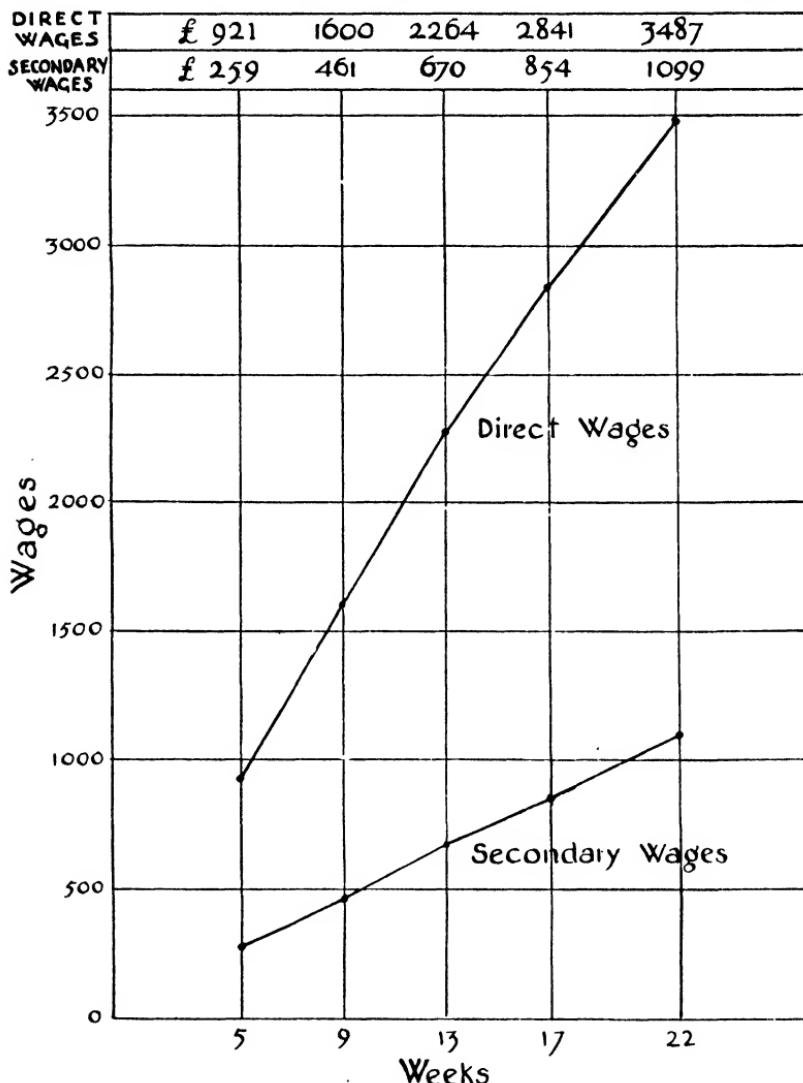


FIG. 27.—Amount-of-Change Chart.

to what degree any two or more series of values are maintaining the same ratio to each other. As pointed out earlier, the same percentage of change will give parallel lines on the respective graphs. One of the very convenient features of

the rate-of-change chart field is that, within the compass of convenient size sheet such as foolscap, a remarkable range of values may be plotted. Further, the virtues of the chart still remain when different scales are used for the different graphs, which itself increases the accommodation of the field.

For the purpose of illustration, two sets of figures of direct wages and secondary wages have been taken. The ratio of secondary wages to direct wages can be an important matter to watch, as explained in Chapter VIII.* Out of experience a formula or normal ratio can be established by which to test the trend of the relationship between the two.

In Fig. 26 cumulative figures are plotted on rate-of-change (semi-log) paper. A dotted graph has been added to indicate the path that secondary wages would have followed if the normal ratio or percentage proportions had been maintained. The dotted line will be found consequently to be parallel to that of the direct wages graph, which illustrates the characteristic feature of rate-of-change paper. In the example, secondary wages are shown to be steadily exceeding their normal proportion. It would be for the management to find the necessary corrective to this departure from budget assumptions.

By way of contrast, the data of Fig. 26 are shown plotted in Fig. 27 on amount-of-change (ordinary squared) paper. It will be noted that a graphical representation in this form conveys no useful indication of the trend of affairs.

Z Charts.—This type of chart has most application to sales statistics, but can, with equal advantage, be applied to any class of statistics, where it is important to watch their trend. Such an alternative application, for example, would be to costs of defective work.†

The name (Z) follows from the general shape taken up by the three graphs entering into the chart, which are :

- (1) Monthly Total—plotted to a scale large enough to show fluctuations clearly;
- (2) Cumulative Total, month by month;
- (3) Moving Annual Total, month by month.

(2) and (3) are plotted to the same scale (usually smaller than that used for (1)), and must, therefore, always meet at the end of the twelve-month period.

* See p. 188.

† See p. 170.

The specimen chart, Fig. 28, shows sales turnover figures in these three forms. The corresponding sales budget figures are shown by dotted graphs. This enables performance to be compared monthly with expectations. It will be noted in the chart, that in March, Year B, sales showed a greater increase

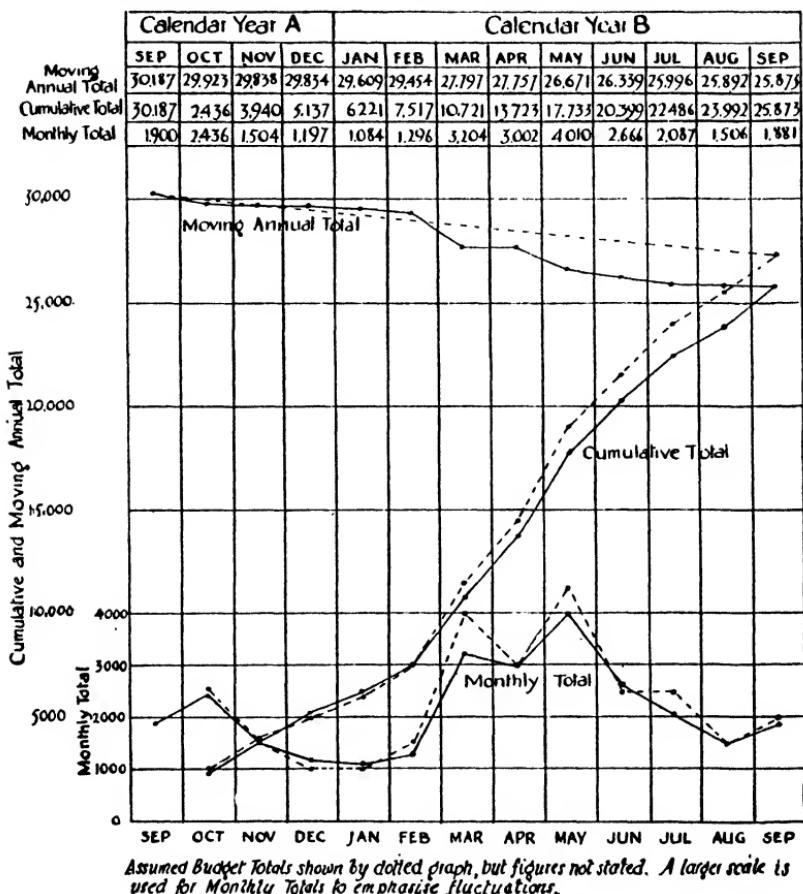


FIG. 28.—Z Chart.

over the preceding month than was shown in any other two months, and yet, as disclosed by the moving annual total, from this point onwards, to the end of the trading year (in this case Sept.), sales failed to maintain the level of the previous year. As the figures used for this chart are the same as those used for explaining the construction of a moving annual total (p. 259), it can be seen that the March Sales in Year A were

very high. Failure to reach this total in March of Year B explains the sudden drop in the M.A.T.

By using these methods of watching trends, it may be discovered, for instance, that the sales results in March (or some other month, or months) may be an advance indicator of the sales results of the year. Only the intelligent use of these methods, over a period of possibly several years, will reveal their full possibilities of usefulness in any individual business.

Progress Charts.—A type of bar chart devised by H. L. Gantt (U.S.A.) uses two or more bars, in parallel. Each bar is extended, to a common scale, to correspond with the movements in the respective factors represented. The relative lengths of the bars, at any moment of time, shows the progress, or present state of affairs.

The idea has many applications, but a very simple illustration, Fig. 29, will serve for present purposes.

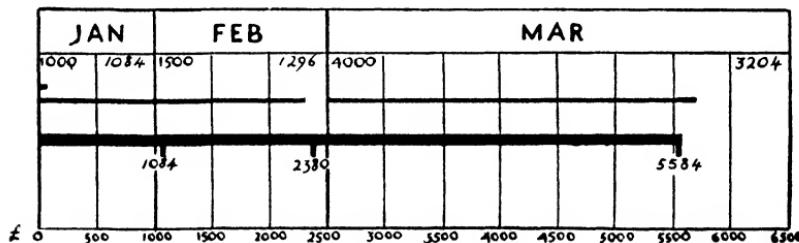


FIG. 29.—Sales Progress Chart.

In this case, the sales quotas for each month are scaled horizontally and each column, or space, equals £500. Two bars are used. The thin bar represents actual sales obtained each month, and the thick bar the cumulative sales.

In January, the sales quota is £1,000 and the actual sales £1,084. The thin bar to represent £1,084 extends over the two £500 spaces (corresponding to the January quota), and the balance of £84 is shown by an extra piece of thin bar above.

In February, the quota is £1,500 and the actual sales £1,296, so that the thin bar does not extend the whole width of the February "quota" spaces. A similar position occurs in March.

Concurrently with the plotting of the monthly actual sales (thin bar), the cumulative actual sales (thick bar) are set down.

A projection is drawn to mark the monthly accretions. It can be seen, in this way, how actual sales are progressing in relation

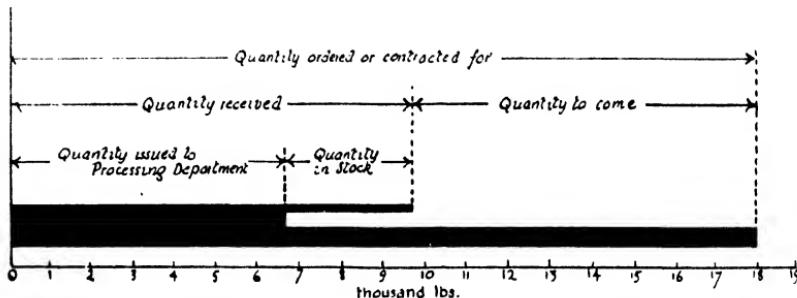


FIG. 30.—Materials Progress Chart.

to quotas—the spaces, as mentioned earlier, corresponding with the quotas.

The method is an alternative one to that of the Z chart (Fig. 28), though not so comprehensive. It is, however,

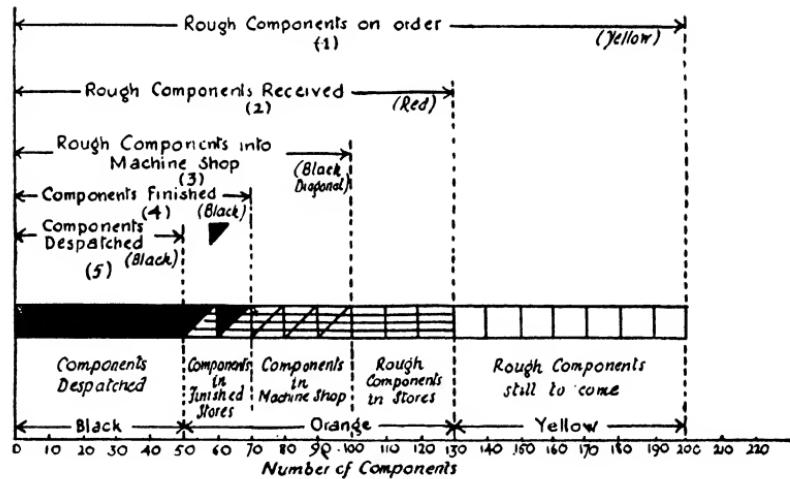


FIG. 31.—Components Progress Chart.

rather easier to use, so far as it goes, and has many applications where the Z chart would be unsuitable.

Another simple application, where three bars are used, is shown in Fig. 30.

A somewhat more elaborate application is shown in Fig. 31, where, instead of several bars, only one is used. On this

bar, however, by means of shading (for present purposes of illustration, but in practice by the use of colours), the equivalent of five separate bars is achieved. The diagram is self-explanatory. The student will appreciate that, as shown, yellow is used for the first stage; red (above the yellow) for the second stage—the yellow turning to orange as a result; black diagonal lines (on orange background) for the third stage—creating open triangles; for the fourth stage the open triangles are filled in black; the fifth stage is by solid black. The colours flow, as it were, from left to right, according as movement, or progress, takes place at each stage.

HIGHER CONTROL IN MANAGEMENT

In the *Dictionary of Industrial Administration*,¹¹ L. Urwick has laid down "certain principles or guides to action which are valid in all cases, and which may be applied to the tasks of directing and controlling business activities". A full statement of these is given in the chapter on General Principles of Management in Vol. II under the following headings :—

- I. The Principles of Investigation.
- II. The Principle of the Objective.
- III. The Principles of Organisation.
- IV. The Principles of Direction.
- V. The Principles of Experiment.
- VI. The Principles of Control.

An important application of these abstract principles, particularly as to Groups I and VI, is to be found in the methods advocated by T. G. Rose in *Higher Control in Management*.³⁵ These methods are graphical in their technique, and have for their primary purpose the focusing of the current business, technical, trading and financial positions and their trends into compact, arresting and easily understandable form. See diagram "Scheme of the Higher Control Method" on pp. 272-3.

The over-riding object of all control is to keep the trend of events moving in an approved direction—"as the twig is bent, so is the tree inclined". The intelligent use of these methods provides a trustworthy guide to the higher management when determining whether any, and if so what, executive action or changes in policy are called for, and in tracing the consequences of any action or change. One of its features is

that it is based on the use of existing data, and involves little or no extra cost. The method is complementary to that of Control of Expenditure outlined in Chapter VIII.

Two monthly reports also form part of the method, the first dealing with the business and technical positions, and the second with the trading and financial positions. The charts used will vary with individual businesses, but the two given here are typical, and will serve to demonstrate the method of conveying information by means of which control of the business can be gained.

Fig. 32 shows the Business Position Chart, on which are recorded (a) Orders Outstanding, (b) Orders Received and (c) Invoices Issued.

Fig. 34 shows the Working Capital chart, which is one of the series usually presented in connection with the Financial Position.

Limitation of space prevents the inclusion of the remaining charts used in Higher Control work, including those for the Trading Position (Profit and Loss Statements—General and Departmental).

It is to be noted that "Higher Control" makes important use of moving annual totals (M.A.T.).* These serve to "iron out" seasonal and holiday fluctuations, which are difficult to evaluate when results are set out in the form of separate monthly totals—whether in figures only, or in graphs. By this method there is provided each month an annual review, comparable in range with that of the "statutory" annual statement of accounts, but easier to understand and to assimilate quickly.

In Fig. 32b the Moving Annual Total of Orders Received is plotted above that of the monthly totals, using two different scales so that the two lines occupy convenient portions of the chart field, the scale for the current figures being large enough to show adequately the fluctuations.

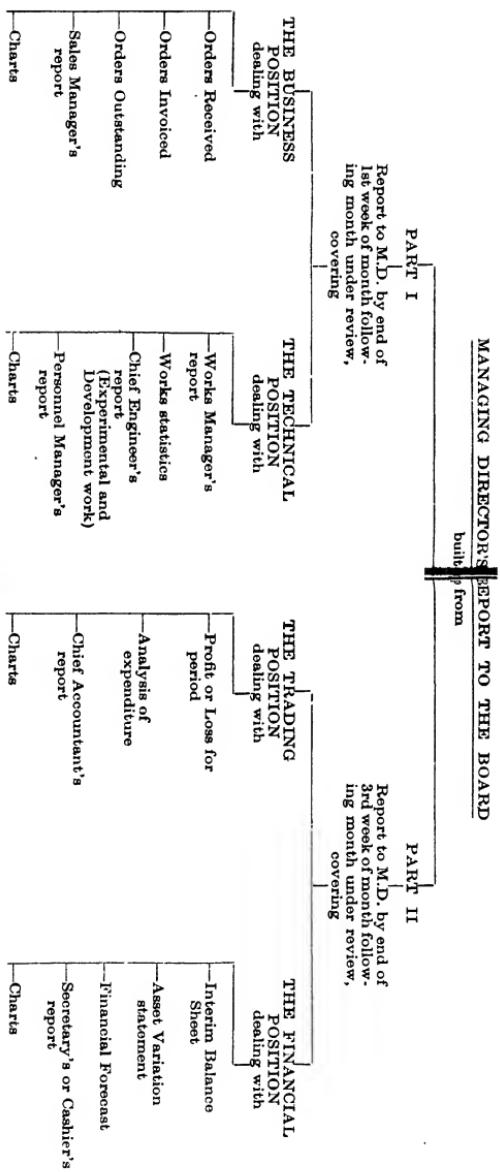
Invoices issued are similarly plotted; the figures used are those recorded daily of invoices issued to customers, without adjustments. The recording of the final sales turnover for the period (in which invoices are adjusted as necessary) is left to the Statement of Account in the trading position.

The graph of *Orders Outstanding* is also shown on this chart, and its purpose is to compare the balance of orders

* See pp. 259 and 260.

SCHEME OF THE HIGHER CONTROL METHOD

BY WHICH THE FACTS AND FIGURES OF A BUSINESS ARE PRESENTED



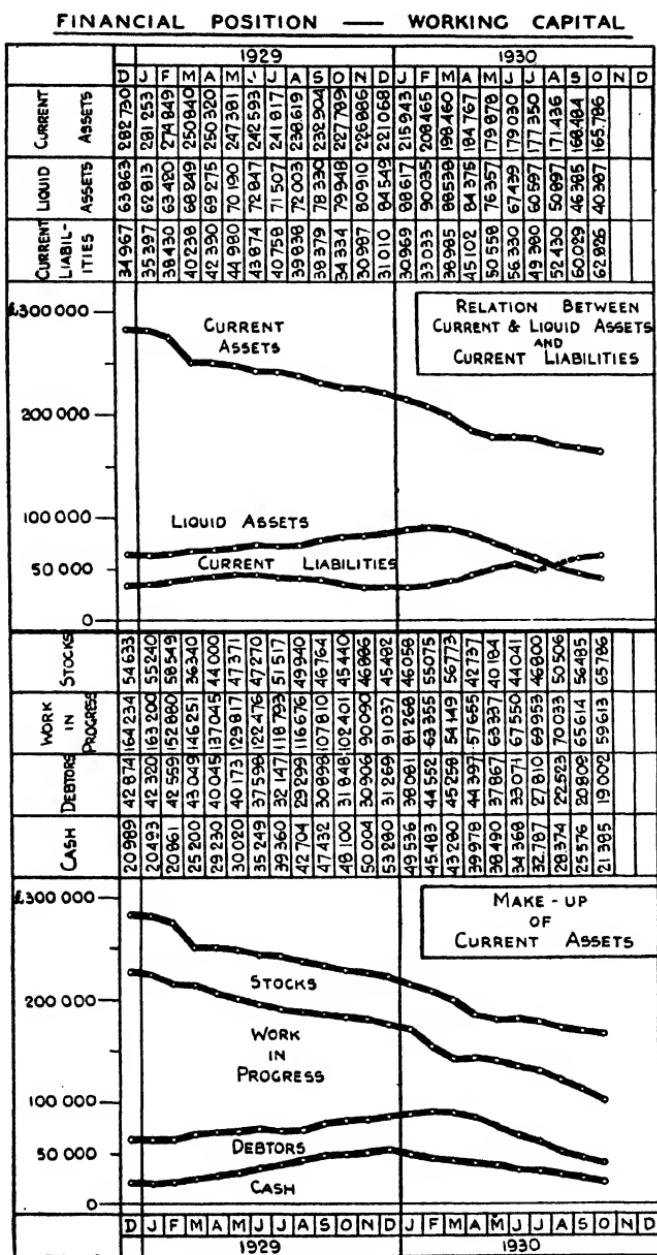
outstanding (*i.e.* work ahead) at the end of each month, with a "normal" balance (*i.e.* the amount found by experience to be the minimum necessary for maintaining production activity at the level assumed in working out "budget" formula ratios * for the purposes described earlier). When the amount of orders outstanding shows a movement which is likely to result in a fall below "normal," the problem of Higher Management is to save the situation by obtaining more business, and/or by reducing expenses to correspond with the business attainable. The various expense control tables indicated in Chapter VIII,† if utilised in conjunction with the above graph, will serve to localise the items of expense that are beginning to involve losses due to declining production activity.

If production activity is stimulated by putting in hand orders for stock which are without the certain assurance of prompt sales, it may be advisable to show on the same chart a lower graph representing the orders outstanding for such stock. This information is of special importance in following the movement of stock and work-in-progress investment, which, in any attempt to stimulate production activity (when sales and therefore cash receipts are falling), may lead to a critical financial position, unless any forewarning given by these graphs is acted upon.

The chart, Fig. 34A, shows the make-up of *Current Assets*—comprising *Liquid Assets*: Cash in hand and at Bank, Sundry Debtors, less bad and doubtful debts, and Free Investments, *i.e.* those not required to be held against loans or reserves, and *Working Assets* (Stocks and Work-in-Progress)—as distinct from the assets that are of a more permanent character, such as buildings, plant, investment in subsidiary companies, etc. As the purpose of the graph is to give the trend of events, rather than to display proven accountancy figures in graphical form, some measure of estimating the value of stocks and work-in-progress is usually permissible, so long as the basis of estimate remains consistent and reliable. The reason for stressing consistency is that it must be possible to maintain comparison with the other graphs in the series over a maximum period, to enable a judgment to be acquired as to when affairs are approaching danger point, or, at any rate, departing from a set of conditions that gave successful results previously.

* See p. 180.

† See pp. 211-2.



By Courtesy of Sir Isaac Pitman & Sons, Ltd.

Financial Position.

FIG. 34.

The chart Fig. 34B of what may be called the "*Solvency Position*" incorporates the line from Fig. 34A of Liquid Assets together with one of Current Liabilities. It is thus easier to see whether there is any danger of Liquid Assets proving unequal to meeting Current Liabilities. If a third line corresponding with that of the aggregate Current Assets in Fig. 34A is added, the extent to which this exceeds (by scale measurements) the line of Liquid Assets indicates the volume of Working Assets (Stocks and Work-in-Progress), which, in due course, should be converted into Liquid Assets.

Whether that conversion will take place quickly enough to meet the requirements of the business is a matter of first importance for the Higher Management to watch. It may, therefore, in some businesses, be necessary to show Work-in-Progress in two parts, namely, Work in hand against Sales Orders, and that in hand against Stock Orders.

The foregoing notes represent a necessarily incomplete summary of the principles involved in Higher Control work. Graphical methods more or less approximating to some of those advocated by T. G. Rose will be familiar to a good many readers, but the student may find consideration of the complete system helpful as an approach to the important question of administrative control. A valuable comment on it is given in the foreword which A. H. Pollen³⁵ contributed to the book when Managing Director of Linotype and Machinery, and in which he said :—

Neither this nor any other interpretation of the facts can, by itself, supply the imagination, the inventiveness, the leadership of men, the intuitions essential to publicity, the instinctive insight into changes in public taste, all of which are in some measure essential to the conduct of any business however well established. It cannot, that is, take the place of those qualifications and gifts without which real industrial chieftainship is inconceivable.

But there are three things that this method can do :—

1. It can make any business manageable, by making its statistics self-explanatory.
2. It can give every responsible department head so exact a comprehension of how his share affects the total results, as to make sure of the eager team co-operation without which no lasting success can be relied on.

3. And finally—and this is of an importance that can hardly be exaggerated—it supplies the only certain way by which those responsible for the final supervision of an undertaking—the owners or directors, as the case may be—can be kept steadily and exactly informed of the progress or retrogression of each of the separate policies the board has instructed the management to pursue.

APPENDIX A

RATING, TAXATION AND INSURANCE

For the student of the Fundamentals of Industrial Administration it is not necessary to go deeply into these matters, and in this appendix it is only possible to touch on their more superficial aspects.

RATING

Local rates are levied by the elected Council constituting the local authority (County Council, Borough Council—County, Metropolitan or Municipal—Urban District Council, or Rural District Council) to meet the expenditure that falls to be made in respect of the area it administers. The rates of County Councils are not levied on ratepayers directly, but through the smaller administrative areas making up the county, so that Municipal, Urban and Rural District Councils do not control all the expenditure for which they levy rates.

An illustration of this may be seen in the following typical schedule.

STATEMENT—RATE SERVICES

The following statement shows how the rate in the pound demanded is made up. It sets out the rate in the pound which would be required to meet the net expenses of each of the principal services, after allowing for specific Government Grants towards the expenses of the services marked * but without allocation to particular services of the Government Grants under the Local Government Act, 1929.

The Government Grants under the Act of 1929 being in aid of Local Government expenses generally, cannot be allocated to any particular service. They reduce by the amount shown the total rate in the pound which would otherwise be demanded.

Services Administered by the Urban District Council :—

	s. d.	s. d.
*Education :—Elementary	1	3·70
*Education :—Higher		0·05
*Housing (Assisted Scheme) 1919		1·00
Public Health :—	s. d.	
Sewers and Sewage Disposal	6·71	
Refuse Collection and Disposal	3·70	
Infectious Hospitals, Mortuary, Cleansing Station, Prevention of Infectious Diseases, and Public Baths	2·89	
Infant Welfare	0·69	
Parks, Pleasure Grounds and Open Spaces	2·74	
Avenue House and Grounds	0·47	
	—————	
	1	5·20

	s. d.	s. d.
Highways, (including Scavenging, etc., thereof)	8.01	
Public Lighting	3.47	
Fire Brigade	1.91	
Public Library	0.53	
Administration and other purposes . . .	8.92	
	<hr/>	
<i>Deduct</i> in respect of appropriation from balance General Rate Fund	4 8.79	
	<hr/>	
<i>Services Administered by the County Council</i> :—		3.26
(a) GENERAL COUNTY PURPOSES :—	s. d.	
*Education : Higher	7.00	
Public Assistance	1 11.24	
*Highways and Bridges	10.35	
Public Health	4.28	
Care of the Mentally Defective	2.00	
Mental Hospitals	1.61	
Administration of Justice	0.65	
Rivers Pollution Prevention	0.36	
Agriculture	0.09	
Other Services and expenses	3.33	
	<hr/>	
<i>Deduct</i> in respect of credits of the County Council (not being Government Grants)	4 4.91	
	<hr/>	
(b) SPECIAL COUNTY PURPOSES :—	0.91	4 4.00
*Registration of Electors	0.20	
Add for additional sum under the proviso to Section 9 (2) (c) of the Rating and Valuation Act, 1925	0.01	
	<hr/>	4 4.21
<i>Services Administered by Precepting Authorities other than the County Council</i> :—		
Assessment Committee	0.07	
*Metropolitan Police	10.93	
	<hr/>	11.00
	<hr/>	9 8.74
<i>Deduct</i> .—The equivalent in terms of a rate in the pound of—		
The Exchequer Grants under the Local Govern- ment Act, 1929.		
(a) Amount receivable by Urban District Council	1 0.74	
(b) Amount receivable by County Council .	Nil	
	<hr/>	1 0.74
RATE IN THE POUND PAYABLE BY RATEPAYER	<u>8s. 8d.</u>	

Under what is called "de-rating" the rates leviable on agricultural land (entirely) and on certain industrial and transport property (as to 75 per cent.) are paid out of the National Exchequer

as a grant to the local authority. Under the Rating and Valuation Act, 1925 (referred to on p. 134), Manufacturing and Processing Machinery ceased to be liable to assessment. These concessions to owners of agricultural and industrial property obscure somewhat the significance of the official statistics of rateable value upon which rates are levied.

An approximation to the aggregate rateable value of England and Wales can be made up as follows in relation to the year 1932. If the figures are thought of as rental values (which is only roughly true), something will be seen of the immense property assets in this country. (The comparable figures for Scotland are not available in similarly dissected form, but for present purposes may be taken as round about £50 million.)

England and Wales, 1932

Net Annual Value of Agricultural Land and Agricultural Buildings, say	£30 million.
Full Rateable Value of Industrial and Freight Transport Hereditaments (subject to de-rating), say	£45 million.
Full Rateable Value of Other Hereditaments (Business and Residential Property), say	£255 million.
Value of Property occupied by or on behalf of the Crown for public purposes upon which contributions in lieu of rates are paid, say	£3½ million.
Aggregate Rateable Value, say	<u>£333½ million.</u>

The individual ratepayer, apart from electing representatives to the local Council, has no control over the amount of rates levied. He may, however, appeal against his assessment in respect of the rateable value. The fact that each industrial property has its own peculiar features makes it a highly technical matter to dispute successfully any assessment, and professional expert service is almost essential.

TAXATION

Many as are the forms of taxation, both national and local, it is practically only Income Tax that comes in for serious attention within an industrial organisation—except where customs or other duties affect the cost of raw materials, or the ultimate selling price of the product, or where (as in the case in certain industries) taxation is exacted in the form of licences, sometimes reaching a high aggregate annually.

For industrial undertakings the preparation of Income Tax Returns is a matter of highly skilled accountancy. Substantially the only aspect lending itself to general discussion as part of industrial administration is that dealt with under Depreciation in Chapter V on p. 132, where reference is made to Income Tax "Wear and Tear" Allowances. Other references are made to Income Tax as will be seen from the Subject Index.

It is relevant to observe, however, that whereas customs and excise duties and the cost of licences are chargeable as expenses

before arriving at the amount of profits on which Income Tax is assessed, Income Tax itself and Property Tax (which is a special form of Income Tax charged on the "annual value" or theoretical annual income derivable from property by its owners) are not allowed to be charged as expenses for that purpose.

The reason for this is that Income Tax under Schedule D on the profits of a business and Property Tax under Schedule A on the annual value above mentioned, are what is called "appropriations of profit," *i.e.* they represent that proportion of the profits of an undertaking which is payable to the national exchequer for general purposes, and it is obvious that to allow them as expenses would be to reduce seriously the amount of tax recoverable.

The student may find a certain interest in the classes of national expenditure, that taxation of one sort or another is required to meet, from the following statistics given on Income Tax Assessment forms issued to taxpayers in 1934.

ESTIMATED NATIONAL EXPENDITURE IN 1933-34

1. GRANT SERVICES :	£	£
For Local and Other Services, including Exchequer Contributions to Local Revenues	45,911,000	
Education (excluding Teachers' pensions)	47,788,000	
Housing	15,691,000	
Police	11,309,000	
Agriculture	4,685,000	
Health Services	149,000	
Unemployment Grants and Loans	4,900,000	
Foreign and Imperial	886,000	
Miscellaneous	876,000	
For Irish Services	11,267,000	
		143,462,000
2. NATIONALLY ADMINISTERED SERVICES :		
Debt Interest and Management	224,000,000	
War Pensions	45,519,000	
Old Age Pensions	40,905,000	
Grants to Health Insurance, Unemployment Insurance and Widows', etc., Contributory Pensions Schemes	94,539,000	
Defence Services	110,567,000	
Tax Collection :		
(a) Customs and Excise 4,948,000		
(b) Inland Revenue	7,707,000	
	12,655,000	
All other Services	25,839,000	
		554,024,000
TOTAL ORDINARY EXPENDITURE		697,486,000
3. SELF-SUPPORTING SERVICES :		
Post Office	59,439,000	
Road Fund	24,100,000	
		83,539,000

INSURANCE

The functions of insurance are either to indemnify the insured against risk of losses involved in contingencies of one kind or other, or to make provision for the due replacement of an asset at a future date.

A corollary of such insurances has been the setting up of protective and preventive measures to minimise the risk of contingency or mischance and the cost of insurance; notably, for ships, there is Lloyd's Shipping Registry, which inspects mercantile shipping during construction or repair. In a larger interest than that of either owner or insurance company, Board of Trade regulations lay down that ships may not proceed to sea without being certified as seaworthy and in charge of certified officers. Along these lines the safety of passengers, crew and cargo is better secured, and the owner has to pay a lower premium than otherwise would be necessary.

In life insurance, the contingency to be insured against is not primarily that of death itself, which is inevitable, but the contingency of death before the annual savings available (as represented by the annual premium) would have amounted to a specified sum.

With a Capital Redemption Policy (by policy is meant insurance contract) referred to on p. 204, no question of contingency arises; except that investment by the individual of his annual savings might not secure any definite level of interest thereon and, through misjudgment, might even involve the loss of the principal invested. The Insurance Company, therefore, undertakes a professional service and, in consideration of a series of annual premiums, guarantees to provide a certain capital sum at an agreed date.

It will not be difficult to understand that insurance is a very important foundation of the structure of credit (Chap. IV). Bills of Lading, for instance, would have little commercial acceptability were it not that, by insurance, provision is made for indemnifying the owner if any particular cargo fails to reach its intended destination in good order. A particular case of credit insurance is cited on p. 93.

For the private individual, insurance is not less important in the interest of his continued solvency, whatever befalls him. In the form of life insurance, the relief he obtains from Income Tax makes insurance particularly wise and profitable as an investment.

The forms of insurance which operate in business are many, and for the most part are well known. It may, however, help to visualise better the range of modern insurance (apart from National Insurance) to set down a representative list of types, such as—

- (1) Capital Redemption.
- (2) Cash in Transit.
- (3) Fidelity Guarantee.
- (4) Fire (including loss of rent and loss of profits).
- (5) Life.

- (6) Machinery.
- (7) Marine.
- (8) Motor.
- (9) Personal Accident.
- (10) Plate Glass.
- (11) Workmen's Compensation.
- (12) Third Party Insurance.

These and other classes of insurance are dealt with in specialised treatises.

APPENDIX B

NOTES FOR STUDENTS

Studies serve for delight, for ornament, and for ability. Their chief use for delight, is in privateness ; for ornament, is in discourse ; and for ability, is in the judgment and disposition of business. For expert men can execute, and perhaps judge of particulars, one by one ; but the general counsels, and the plots and marshalling of affairs, come best from those that are learned.

From Bacon's " Essays " ; L. " Of Studies. "

The roads to full administrative responsibility are many, but long. Normally, a man becomes a specialist in some functional activity before he attains a high administrative position ; and usually he will have had specialist training and education, and departmental executive responsibility. The student will therefore make himself as proficient as he can in each phase of the specialist profession in which he begins his business career, before seeking to acquire more advanced administrative qualifications by examination.

The Examinations of the Institute of Industrial Administration are not intended to compete with or to replace the full field of study appropriate to any such profession, or for the qualification of the functional or departmental specialist as such. Their purpose is to test the student's knowledge of the principles underlying the activities of departments other than that in which he has specialised, and of the broad outlines of the application of those principles.

They call for a course of study, and the acquisition of a store of knowledge, which have a valuable administrative content. They are intended to help those who wish to prepare themselves effectively beforehand to discharge administrative duties worthily when the opportunity comes.

Such preparation is naturally a synthetic process, based on specialist education and knowledge and experience of some departmental activity. At this stage, in so far as the student has not already obtained sound knowledge of the operational subjects of accounting and statistical method, as well as of fundamentals of industrial administration, he will find it beneficial to him to do so.

His next step should be to acquire systematic and well-proportioned knowledge of the principles underlying the other departmental activities and of their application. Later, the aspirant to full administrative responsibility must make himself well acquainted with the broad principles both of internal control at higher levels, and of external business activities and the controlling influences under which they operate. Finally, all these factors must be effectively co-ordinated for the full success of any industrial undertaking.

SYLLABUS OF INTERMEDIATE CERTIFICATE IN INDUSTRIAL ADMINISTRATION**Administration and Management—Principles.**

Use of terms (Administration, Management, Organisation). The scientific approach. Evolution of Management. Analysis of the function. The underlying principles : structure ; relationships ; co-ordination ; functional. Institutional Relations in an industrial society : the social responsibility of industry.

Personnel Administration.

The human factor in industry. Elements of industrial psychology. Functions of the Foreman. Purpose, duties, and responsibilities of a personnel department. Organised relations with labour. Obligations of the employer. Supervision, education and welfare. Remuneration and incentives. Law of master and servant.

Factory Administration (1).

Organisation ; relations between the factory and other departments ; types of production and size of factory in relation to control. Drawings ; Specifications ; Modifications ; Maintenance ; Inspection ; Purchasing ; Storekeeping ; Stocks ; Works orders ; Methods of measurement ; Cost estimates and records.

Sales Organisation and Service.

Sales headquarters organisation. Sales finance. Sale of Goods Act. Sales agreements ; guarantees ; conditions. Field organisation and personnel. Sales literature and sales promotion. Warehouse organisation. Transport methods and economy. After-sales service.

Development and Design.

Development and research as the advance guard of sales. Application of technical and market information. Protection and development of inventions. Designs department : responsibilities and organisation. Designing for production. Product efficiency. Quality control.

Industrial Accounts and Costing.

Timekeeping and wages routine. Time-booking and job records. Material allocation and accounts. Oncosts and their application. Cost accounts and cost control. Plant accounts and records. Cost studies in plant investment. Cost recovery.

Office Organisation and Method.

Office functions ; planning and operation. Office personnel administration. Office equipment and mechanisation. Statistical method and graph technique. Construction of reports. Committee procedure.

In the Examination following this Course the candidate is required to show his acquaintance with administrative technique in its functional or departmental application. The Course is designed more especially for the trainee, or for the junior executive qualified in a specialist functional profession, already taking part in industry or commerce and on the threshold of an administrative career. Such a man has opportunities of appreciating the practical application of the principles studied, and thus of gradually but surely acquiring an informed acquaintance with the science and art of management.

While most of the sections can be identified with particular departments in the majority of large businesses, the extent of study indicated in the respective syllabuses is not intended to be complete preparation for the executive duties of any department. In most cases the exercise of the departmental function is a specialist profession in itself, requiring years of practical and theoretical training. It is, however, possible, by a relatively short intensive study in each section, to arrive at a real grasp of the principles operative in each departmental activity. This wide understanding of administrative technique at that level broadens the outlook and increases the efficiency of any departmental executive, and constitutes an invaluable qualification for senior positions in management.

SYLLABUS OF FINAL CERTIFICATE IN INDUSTRIAL ADMINISTRATION

Administration and Management—Practice.

Formulating policies. Instructions and information. Delegating responsibility. Administrative instruments : standards ; records and charts ; statistics ; ratios ; audits. Methods of co-ordination : committees ; correlating and balancing functions ; use of specialists ; psychological factors. Leadership and morale : selection ; training ; grading ; promoting. Industrial and public relations. Management research.

Industrial Relations and Social Factors in Industry.

Trade Union organisation. Collective and corporate bargaining. Organised co-operation with management. Trade disputes ; legal position. Machinery of negotiation. Standard of living. Social legislation. The wage earner and citizenship.

Factory Administration (2).

Plant layout and capacity ; Tooling ; Process analysis ; Instructions ; Scheduling ; Programmes ; Flow of Materials ; Balancing ; Progress ; Excess costs ; Plant and labour utilisation ; Training.

Sales Policy and Publicity.

Applying the results of market research. Influence of manufacturing resources. Choice of channels of distribution. Price policy. Credit policy. Forms and methods of publicity. Functions of the advertising agent.

Market Research and Business Forecasting.

Investigation of buying habits and preferences. Estimating consumer demand. Buying power indicators. Sources of market information. Population trends. Business forecasting. Climatic and other factors affecting supply of materials. Trade trends and cycles. Business statistics and their application.

Financial Administration.

Fundamentals of financial accounts. Departmental, trading, and profit and loss accounts; balance sheets. The cash forecast. Finance committee work. Financing of credit and seasonal trade. Reserves; reserve funds; sinking funds; investments. Presentation of figures.

Budgetary and Higher Control.

Budgetary control in theory and practice. Price-volume surveys. Higher control as the instrument of higher management. Operation through sectional controls. Interpretation of accounting returns. Management ratios and indices. Management graphics.

Business Structure and Finance.

Business facilities : banking ; stock exchange ; insurance. Finding and investing capital. Sole traders ; syndicates ; partnerships. The joint stock company : promotion, finance, regulations ; holding companies ; mergers and amalgamations. Rationalisation. Trade associations. Public undertakings. State services. International trading organisations and finance.

In the Examination following this Course the candidate is required to show his acquaintance with the management function as a whole, and with more advanced aspects of other functional subjects with which he has already been made acquainted.

The Course is designed more especially for the senior executive, qualified technically in a specialist functional profession and administratively in the subjects comprised in the Intermediate Certificate, who has been entrusted with a greater measure of functional administrative responsibility in industry or commerce ; and to lead him to understand that the outstanding objective of management, on whatever scale it operates, is effectively to co-ordinate and integrate the activities and interests of all concerned with a given enterprise in the achievement of its purposes.

Such co-ordination and integration demand judgment, guidance, control, decision, and intelligent discrimination. For the most effective exercise of these, sound instruction in the principles of the basic and functional aspects of Industrial Administration is essential —since effective co-ordination and integration necessitate reasonable knowledge of the activities to be co-ordinated and integrated.

EXAMINATION STANDARDS

These are such as require the student to show that he has a real insight into the principles of the subjects studied, understands their application and administrative value, and is well enough instructed to be in no doubt how to use and how to supplement his knowledge, as and when necessary, to meet the exigencies of business when he comes to occupy a responsible administrative position.

The limitations that this implies have their counterpart in every profession; for, when a student passes his "Final," it is not to be supposed that he has no more to learn. Rather, he has but demonstrated that he is qualified to apply the lessons of everyday experience to his own professional development. He has had his mind opened to the technique of his profession, and especially to the main principles controlling that technique.

PURPOSE OF THE EXAMINATIONS

Preparation for these Examinations is the normal complementary foundation by study for the practice of industrial management.

Passing of these Examinations is not evidence of specialisation in any executive branch, but indicates an advanced standard of knowledge of the principles of Management and of their general and functional application.

The Examinations are not intended to test the candidate in regard to his full competence to initiate high administrative policy, since actual performance alone can do this, but the systematic knowledge acquired by the successful candidate will assist him to approach questions of policy on sound and practical lines.

In acquiring such knowledge the student will develop a sympathetic and practical insight into the work and the problems of his colleagues in other departments. Thus equipped, he will be in a position to make both a greater contribution to the general effectiveness of the undertaking, and better use of opportunities for promotion.

Short cuts should be avoided. Preparation for full administrative responsibility is a serious task, and cannot be "crammed" in a few lectures. The syllabus should be covered as a whole. No subject should be omitted, or taken out of its order in the Syllabus. Each step should be mastered before the next is attempted. Young students, in particular, will be well advised to take each subject singly, and to give ample time to reading, reflection, observation and practice therein.

Systematic study on such lines in preparation for the Examinations of the Institute will be found helpful in preparing executives, whether departmental or general, to approach the problems of management with a mind informed as to the principles underlying the various functions, and with a due sense of proportion.

GENERAL CONSIDERATIONS

In a science so progressive as that of Management, study should not cease when examinations are over. Only by being up-to-date in his technical and administrative reading, and keeping closely in touch with new developments in Management, can the executive hope fully to maintain his administrative efficiency. In this he will be materially assisted by close acquaintance with and continuing study of the principles of and developments in economics, industrial history, psychology and its application to industrial and commercial functions, and sociology and social science.

Last, but not least, the executive will realise from experience the great importance of power of expression. No man who lacks it can be fully effective. Unfortunately, it is often abused : throughout human history, and not least in our own generation, immeasurable mischief, misery and suffering have been wrought by facile but ill-informed or evilly-disposed orators, speaking from false but plausible premises. But, because equally it can be a powerful influence for good, the wise executive will cultivate to the best of his ability the art of public speaking (if he has the gift, so much the better); for, as his management responsibilities grow, he will increasingly find himself in situations that call for clear, cogent and impartial exposition of facts, reliable inferences from them, and practical suggestions for intelligent action. If he answers those calls effectively, he will make no small contribution to industrial peace and progress; and in so doing he will fit himself for greater responsibilities, perhaps in a wider field.

The Student's development of his knowledge and experience of the foregoing subjects should be accompanied by a parallel development of his own personality and character. Personal qualities are outside the scope of examination. They are, however, of vital importance. Every student should give close attention to this aspect of his education, and, by learning how "to see himself as others see him," endeavour to equip himself with character as well as knowledge.

"Wisdom is the principal thing : therefore get wisdom, and with all thy getting get understanding."

Incline thine ear unto wisdom, and apply thine heart to understanding ; yea, if thou criest after knowledge, and liftest up thy voice for understanding.

Happy is the man that findeth wisdom, and the man that getteth understanding ; for the merchandise of it is better than the merchandise of silver, and the gain thereof than fine gold."

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